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ABSTRACT

Eighty papers from a 1985 international conference on improving university teaching are presented. Topics include the following: personality problems of students; using computers in teaching; burnout, stress, and renewal of academic staff; improving teaching by evaluating teachers; teaching writing; curriculum development in management and applied sociology; students' conceptions of learning and thinking; new approaches to curriculum development; computer training and networking; increasing students' involvement in learning; faculty motivation and personnel policies; institutional planning and evaluation; problems of individual student differences in background; teaching learning and thinking; evaluations of computer-assisted learning; independent study and distance learning; teaching values and attitudes; and more perspectives on faculty development. (SW)

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Improving University Teaching

II

Contributed Papers

Eleventh International Conference

July 2-5, 1985
Utrecht, The Netherlands

Under the auspices of
The University of Maryland
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and
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WEDNESDAY, 3 JULY

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A PRELIMINARY PORTRAIT OF STUDENTS WHO ARE ADULT CHILDREN OF ALCOHOLICS

Donnah Canavan-Gumpert
Boston College

INTRODUCTION

Over the past few years several papers at the International Conference of University Teachers have focused on programs of alcohol education in the college or university. In all respect to the national notoriety that Boston College has achieved this year with Doug Flutie and the Cotton Bowl, a frequently associated problem, alcohol abuse, is of great concern to the faculty, and the counseling center at Boston College Though related, the problem I plan to deal with in this paper is different and in many respects more pressing, because less obvious, indeed frequently hidden in shame. I am referring to the educational and psychological problem posed by a group which has recently been identified as Adult Children of Alcoholics. As I will describe I am concerned with the problem from each of the three roles I play in my university, as a teacher, as a researcher and as a clinical psychologist. This paper is about work in progress and I am apprehensive that it will be greeted with the enthusiasm that is generated by the announcement of a new disease: 'shoot the messenger'. On the other hand I hope to stimulate the interest and concern in conference participants that my various activities have generated in me. In order, I will describe how I got interested in the problem, a preliminary survey study and finally my reflections as a therapist in a group of students who are adult children of alcoholics.

A year and a half ago at the onset of Christmas vacation, an outstanding middle-aged student in my Evening College course on the Neurotic Fear of Success asked whether success fearers weren't just like adult children of alcoholics; since the category adult children of alcoholics was new to me I asked for more information, which she provided and indeed there was a great deal of similarity. Virtually simultaneously, several of the undergraduates in another course presented themselves in my office in crisis over their anxiety about returning to alcoholic homes for Christmas vacation. As it happened, all these young women had been working with a campus outreach group which was helping grammar school children living in homes with an actively alcoholic parent. From both a research and a clinical point of view I decided to look further into the problem.

With the enthusiastic support of the school's counseling center I started a therapy group for the students in crisis; word of mouth brought the enrollment to eight undergraduate females 18 to 21 years old by the time of the first meeting. At this writing the group has been meeting for more than a year. Concommitantly, an interested group of undergraduates joined me in initiating a survey study of the problem. I will present the study first and conclude with my observations of the therapy group.

THE RESEARCH

A little known, somewhat speculative literature has been developed by social workers and clinicians who had begun to identify this group. Several different approaches to identifying the characteristics of adult children of alcoholics were presented, depending to some extent on the kind of clinical work, e.g., family, individual counseling, the author had done. One book by Woititz (1983) entitled Adult Children of Alcoholics, detailed 13 characteristics as follows:

1. They guess at what normal behavior is.
2. They have difficulty following a project through from beginning to end.
3. They lie when it would be just as easy to tell the truth.
4. They judge themselves without mercy.
5. They have difficulty having fun.
6. They take themselves very seriously.

7. They have difficulty with intimate relationships.
8. They overreact to changes over which they have no control.
9. They constantly seek approval and affirmation.
10. They usually feel that they are different from other people.
11. They are overresponsible or very irresponsible.
12. They are extremely loyal, even in the face of evidence that the loyalty is undeserved.
13. They are impulsive.

Black (1982) in a book entitled *It will never happen to me* documents three major areas of troubled development in alcoholic homes: trust, feeling and communication. She also reports that while many children appear to do extraordinarily well despite their home conditions that many of them begin to show symptoms and to experience difficulty in early adulthood, particularly around transitions, separations and the acquisition of real independence. The double irony here of course is that as captured in the term adult-children the children who seemed perfectly alright despite their home circumstances, begin to feel like bereft children precisely at the point they begin to achieve what they have been striving for for so many years, a modicum of independence and control over their own lives. It seems that psychologically they can't leave home. For the adult children who enter college, and many do, it is frequently a time of guilt, conflict and preoccupation with what is happening at home even though home may be thousands of miles away.

As described in the Book *The success-fearing personality* (Canavan-Gumpert, Garner, & Gumpert, 1978), fear of success is a personality trait characterized by low and unstable self-esteem, a preoccupation with evaluation and competition, and a repudiation of one's competency. Success fearers are ambivalent about success; while they have a high motivation to succeed, they also carry an unconscious motive not to succeed which manifests itself in their sabotaging their successes. Though they are particularly fearful of failure they, in fact, perform very well when confronted with the threat of failure. They are indecisive, procrastinate and vascillate in their behavior. The origins of this primarily unconscious motive are thought to come from childhood where they developed fear of retaliation in competition as a residue of the conflict with the same sex parent in the Oedipus Complex, and a fear of abandonment if they become independent from the separation-individuation complex. Once the connection was made between success fearers and children of alcoholics, it was not surprising to think that the resolution of these childhood conflicts would be more protracted in alcohlic homes.

For a number of reasons virtually no empirical data have been collected in this group. The reasons range from the belief that they are alright, to their being stigmatized, to the major interest being in their high risk for developing alcoholism themselves, to the difficulty researchers have in identifying them. Despite the anticipated difficulties several of my students and I designed a survey which we distributed last spring with the dual purpose of trying to identify the magnitude of the problem at our university and to make a beginning data based check on whether the speculations of the clinicians were accurate for college students.

THE SURVEY

The survey attempted to investigate three questions: 1) Did the college student adult children differ significantly from the general population (of college students) with respect to thirteen characteristics that Woititz had described? This was done by converting each of the characteristics into several questionnaire statements in a 6 point never/always format. 2) Were adult children higher in fear of success than the general population? This question was assessed by including a subscale of twenty-two of the original sixty-four items on the Cohen Fear of Success Scale (Canavan-Gumpert, Garner, & Gumpert, 1978). Finally, in an effort to describe the differences between the affective worlds of children of alcoholics as compared with the general population of college students, the respondents were asked to use a 6-point scale (never/always) to rate their recollection of the frequency with which they experienced each of ninety-two emotions when "you were living with your family."

The following efforts were taken in order to maximize questionnaire returns from adult children of alcoholics, who are reluctant to admit this status: A cover sheet provided in soliciting the cooperation of the students in an effort to document the kinds of home problems students bring from their backgrounds, and the characteristics of the students affected by these problems; divorce and mental illness were included with alcoholism as home problems. The surveys were completed anonymously, and finally students were asked not to respond to the survey if they could not do so candidly.

Questionnaires were distributed to 100 students by the resident assistants in a dormitory and were returned anonymously to a box outside the resident assistants' doors. Of the total of 58 completed surveys that were returned 20 were children of alcoholics and 36 indicated no significant family problems. Of the children of alcoholics 7 were male and 13 were female, and in the control sample 14 were male and 24 were female. In addition 14 surveys were returned by students who were children of alcoholics but who apparently at the suggestion of the resident assistant chose to protect their anonymity by not indicating their sex. The data were analyzed by t-test. All surveys were included in the analyses comparing children of alcoholics with children of non-alcoholics and of course only the surveys where the respondent indicated his or her sex were included in the analyses where sex differences are reported.

RESULTS

The response to the questions representing Woititz's thirteen characteristics were summed to total scores and analyzed by t-test. The children of alcoholics scored only marginally higher on the questions measuring Woititz's thirteen characteristics ($t=1.4$, $p<.10$). Analyses of some questions representing the individual characteristics, however, were reliable at conventional significance levels and support the notion that children of alcoholics of one or both sexes differ from the comparison group on characteristics Woititz presents. In general, children of alcoholics indicated that they were more concerned about whether their behavior was normal; were told by others that they took themselves too seriously; needed constant approval and affirmation from others (the female adult children were particulary high on this); had a higher frequency of crisis and urgent events in their lives; and overreacted to changes over which they have no control. Only the male children of alcoholics indicated being highly critical of themselves and having difficulty following a project through from beginning to end; in addition they scored significantly lower than all other groups on the question of "impulsivity"--they were less likely to swing into action rather than reflecting on their feelings. Only the female children of alcoholics indicated a tendency to idealize by doing more daydreaming about the perfect family life and to indicate undue loyalty by staying in a relationship which is costly when others would have left. Finally, male children of alcoholics indicate a significantly lesser fear that they will be rejected for being themselves than do female children of alcoholics (this difference emerges as much from the male adult children's low fear of rejection as from the female adult children's high fear).

As anticipated from the similarity in the description of success-fearers and adult children of alcoholics, the children of alcoholics scored significantly higher on the fear of success measure than did the students who were not children of alcoholics ($t=1.73$, $p<.05$). Male children of alcoholics scored significantly higher than male children of non-alcoholics, and female children of alcoholics scored higher than female children of non-alcoholics. However, a subanalysis of only the female children of alcoholics revealed that the female adult children whose mother was alcoholic scored significantly higher than the female adult children whose father was alcoholic (in fact the females with alcoholic fathers were not different from the females unaffected by parental alcoholism). Though the numbers are small, the means are reliable. It is perhaps worth commenting that in the ten years I've been doing research on fear of success the scores of the children of alcoholics where the same sex parent is alcoholic are among the highest scores I've ever seen. And at least at Boston College, many of these students must overlap with the group of students who have participated as the "highs" in the experiments on fear of success.

THE DATA ON AFFECT

From the point of view of someone familiar with psychological testing, the affective data were perhaps the most powerful and the most descriptive of the personal worlds of the adult children in the study. If, as in art, one thinks of the affect as portraying the colors and angles of one's perception of the subjective world one inhabits then these data were indeed informative. It will be recalled that the respondents rated how frequently they remember experiencing a series of emotions "when they lived at home."

Each respondent's scores were summed separately over the positive and negative feelings and t-tests were performed on the groups of interest. It was striking to see such reliable differences emerge with such a small number of observations. The adult children of alcoholics reported experiencing significantly less positive affect overall ($t=3.81$, $p<.0005$). Female children of alcoholics reported significantly less positive affect than did female students of non-alcoholic parents; though the mean was lower for male students with an alocholic parent, it was not significantly lower than that for males without an alcoholic parent. An additional, somewhat surprising result, was that in general males reported experiencing more positive emotion than females. With respect to the negative emotions, the students with an alcoholic parent reported significantly more negative affect ($t=6.39$, $p<.0005$). Female students of an alcoholic parent reported significantly more negative affect than the females without an alcoholic parent and male students with an alcoholic parent reported more negative affect than did male students without an alcoholic parent. As with the positive affect there was a general sex difference with females again coming up the affective losers; females reported more negative feelings than did males. Given the high reliability of the differences between the children of alcoholics and the children of non-alcoholics, it will not be surprising that there were significant differences on most of the individual emotions. I will try to give a flavor of the overall picture by describing some of the emotions that showed the biggest differences between the children of alcoholics and the comparison group, and some that yielded no differences; then I will describer some of the feelings on which male and female adult children of alcoholics differed. In general children of alcoholics compared to children of non-alcoholics reported feeling less special, understood, security, comfort, delight, patience, affection, and happiness; they reported more feelings of doom, terror, panic neglect, anxiety, hatred, injustice, contempt and of being deceived, deprived, and victimized. There were no differences between the groups in the amount of reported guilt, independence, strength, excitement, loyalty or hopefulness. The female children of alcoholics reported feeling more reponsible for the care of others, more emptiness, isolation, abandonment, less kindness and respect. The male children of alcoholics reported feeling more worry, on edge, overwhelmed and torn, less competent, more comfort with silence and more looking forward. Though the general picture is much the same for both sexes, there do appear to be some differences in what they emphasize. The males seem to feel more anxious, immobilized and disturbed by what is happening, but not as bad about themselves. The females, on the other hand, indicate stronger concerns about their self-esteem and lovability, but are less immobilized; the females seem to react to the situation more personally.

These affective portraits are striking, especially when in looking at a few of the individual cases there are responses like security=0 (never), fear=4 (almost always), as compared with some of the controls where the numbers were reversed. Earlier in the year I had been to an exhibit of artwork done by children of alcoholics of all ages. These affective data reminded me of some of the drawings I had seen where the children of alcoholics had portrayed thier homes in reds, grays, purples and blacks in contrast to their portrayals of other children's homes in blues, greens and yellows. Taken as a whole these data portray a group of students who at Boston College constitute somewhere upwards of 15% of the student population who are personally embattled and highly stressed. Despite a superficial mature posture, they are more likely to sabotage their successes, to be preoccupied with parents and younger siblings at home and to be highly conflicted about achieving the personal independence that a college education can provide. Many of them may be underachievers, in some cases because they have not learned some of the conventions and customs that constitute good work habits and study skills.

The number of children of alcoholics in the study, though large enough to draw some initial conclusions about children of alcoholics, is too small to draw confident conclusions when broken into smaller subgroups, e.g., daugthers vs. sons, or daughters of mothers vs. daughters of fathers. Even with such small numbers, however, many of the t-tests using these subgroups produced reliable results. For example the fear of success scores of the daughters with mother alcoholics were virtually non-overlapping with those of daughters of alcoholic fathers. It is a particular problem with these data that there was not one male student who responded to the questionnaire who was the declared son of an alcoholic mother. In principle since there were daughters of mother alcoholics, there are sons of mother alcoholics. At this writing I am uncertain whether they are less likely to go to college, more likely to deny their mother's disease, more likely to pass in a questionnaire without indicating their sex, and/or more likely to protect their own and their mother's anonymity.

THE THERAPY GROUP

Partly by chance and partly researcher's design, the therapy group I have been conducting for the past year is made up of eight women, half of whom have alcoholic fathers and half of whom have alcoholic mothers or both. In reflecting on these students over the year I have been painfully aware of the difficulty of pinpointing what is unique about them because there is no control therapy group. Despite the fact that many of these students were working with a campus outreach group that was assisting grammar school children living in alcoholic homes, they had not shared their own home situations with each other or with anyone, save an occasional close roommate. Thus the beginning phase of the group involved their sharing their feelings and experiences with each other, a dissipation of a good deal of loneliness and after several months, the development of empathy for themselves which clearly grew out of their empathy for each. Besides their fear of stigmatization, the students had held a quiet, somewhat unconscious view that they were responsible for their parents' disease, which they had not really recognized as a disease. In addition they felt responsible to do something to remedy the parents' problems as well as to try to take care of younger siblings. They feel alternately guilty and grateful that they have gotten away to college. The aptness of the term adult-child is apparent in their sense of guilt, and of betrayal of the affected parent and of a false family image as "happy." In each case, it was a sort of crisis and major advance when the student 'confesses,' or told the parents that she was in a therapy group for children of alcoholics.

Though frequently very skilled at recognizing and meeting the needs of others and certain external requirements, these students on the average don't know how to meet their own needs, especially the emotional ones for soothing and comfort in stress or difficulty. They keep a distance from their internal emotional lives and spend a good deal of time coping. On the average they do not have and have never had a sustaining adult figure who is reliable and interested in them. Often the non-alcoholic parent is preoccupied with the alcoholic parent and leans on or became the adult-child in family distress. Thus though good grades are frequently demanded at home, there is little reward for getting them, no sympathy for academic difficulties, and virtually no interest in the details of what the student is doing. Yet they continue to call home to report their achievements and continue to feel disappointed. Oneoften gets the feeling in the group that these students feel as though no one has ever listened to them before.

They seem to have little comfort in relaxing and just being with themselves. Many of the daughters of alcoholic mothers use and abuse alcoholic which they associate with intense emotion (positive or negative) and with self-soothing. Several of the daughters of alcoholic fathers have incipient workaholism (truly dangerous to their health) or obsessive-compulsive activity patterns. (Daughters of alcoholic fathers were not high in feer of success.) The unpleasant truth of these student's family backgrounds is that they have suffered neglect, verbal and frequently physical abuse (incest, which happens to about 14% of American women, occurs most of the time in the presence of an inebriated parent). These students' lives have been characterized by coping, denying and actively meeting crises (mediating family fights, protecting siblings, liberally putting out fires). Partly due to this situation and partly due to their relative ignorance of the functioning of a "normal" home, they developed something to refer to as the 'pathology of hope,' the belief and determination that if they just try hard enough to do the right things that it will be different for them. Though the statistics are decidely against them, as is much of their contemporary behavior, they are desperately certain that their lives will be different -- in fact ideal. As a result they are frequently disappointed, even at this point in their lives, when idealized adult models and romantic relationships turn out to be 'normal' or human. Despite their home situations many of them have a fear and contempt for any sign of frailty or weakness in themselves and others, and an attitude of disbelief about what they find to be the boring nature of everyday life and activities.

At bottom, the self concepts and self esteem of these students are fragile and frequently negative. This is not apparent at first because of the overlay of having acted as an adult and having denied their own needs for warmth and growth for years is what they present to themselves and the world. As Black (1982) mentions, overweighted with real adult responsibilities, not knowing how to mobilize external resources or certain internal ones, things eventually become too top-heavy for these adult children and they experience great difficulty. In a discussion about love in the group, many of the students felt that they do love, but were puzzled about how they would know if someone loved them. One student said tearfully that she had never thought about being loved--by anyone--that respect was what she looked for.

CONCLUSION

As I indicated earlier in the paper, my intention was to reveal a problem and to present some preliminary data and some clinical impressions. Certainly more research must be done in this area before the nature of the problem is clear enough to suggest viable solutions. Since alcoholism is an international disease, it is likely that students in other countries are similarly affected. In the United States the National Institute of Alcohol Abuse reports that children from alcoholic homes are more likely to be affected by dyslexia, and other learning problems. At this point in my study and observation of adult children of alcoholics, I am primarily concerned about increasing the awareness of other college teachers, administrators, and counselors that this is likely to be an unravelling problem of increasing proportions as public awareness increases and the affected students are willing to reveal themselves. My preliminary data and impressions lead me to speculate that while the students from alcoholic homes are similar to each other and different from students from nonalcoholic homes in many respects, they are also different from each other, depending on their sex and the sex of the alcoholic parent. While the daughters of alcoholic mothers have a high fear of success and may be more likely to develop problems with alcohol, the daughters of alcoholic fathers are not particularly conflicted about success and in fact may be more likely to become workaholics; though workaholism may seem a mixed blessing in a university, it is emotionally and physically dangerous in the long run and is frequently fueled by an excess of extrinsic motivation. The sons of alcoholic fathers, like their counterparts, the daughters of alcoholic mothers, are high in fear of success. In the affective data these young men indicated a particulary high amount of anxiety, worry and feeling of helplessness (statistically they run a very high risk of alcoholism). The data from the survey and my observations in the therapy group clearly indicate that the students who are the same sex as the alcoholic parent are very intensely affected. Particulary in respect to their high fear of success, it is not surprising on reflection that they seem to be troubled. While the Oedipus Conflict, which is seen as generating the fear of success, may seem textbookish and remote, what we see with these students is a family situation where their major conflict is with the parent of the same sex and their likely greater attention comes from the parent of the opposite sex; this problem is compounded because the same sex parent is the major role model for adult identification and I think we can safely presume that this is a negative identification. As these young adults reach maturity their childhood need to surpass the same-sex parent raises a great deal of anxiety, ambivalence and guilt as that wish becomes a reality. Especially since they still carry their childhood feelings of fear and insecurity, success, independence, and freedom from the home of origin are paradoxically a mixed blessing to these students. That they fear abandonment and retaliation as they face independence and success is more understandable from this perspective.

The unique characteristics of sons of alcoholic mothers await further investigation. While I am concerned about the problems all these students face while they are in our classrooms, I am even more concerned about Black's warning that we in the universities are acting as the last step on a ladder that is leading these young people to the brink of real adulthood, where they have come of age, fully credentialled and are unknowingly and unobservably still adult-children.

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DETERMINING REASONS FOR SUCCESS AND FAILURE AMONG A SAMPLE OF UNIVERSITY STUDENTS USING THE CRITICAL INCIDENT TECHNIQUE: AN EXPLORATORY STUDY

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INTRODUCTION

Why some people succeed while others fail has been a persistently researched question for many years. Wilhelm Wundt examined it in his Leipzig Laboratory; Alfred Binet developed a test to predict student success in the French schools; and Francis Galton observed that achievement tended to run in families. Despite these and other observations the question remains, "What is necessary for success?" The purpose of this study was to use the Critical Incident Technique as a method for determining some factors that explain why some students succeed and others fail in their academic coursework.

REVIEW OF LITERATURE

College student success has been a concern of professors in the United States for many years. Stemming from these concerns, in 1865, Iowa State College instituted special courses for freshmen to enhance their ability to succeed in college. Following soon after Iowa, Harvard University instituted courses to help their students improve learning. By 1915, three hundred-fifty colleges reported that they had college preparatory departments (Brubaker, Willis, 1976). Immediately after World War II, and again after the Korean War, learning enhancement programs in colleges proliferated due largely to the influx of inadequately prepared veterans. Later, in the 1960's, special programs for the underprepared were revitalized due to an increase in government funding for ill-prepared students; this time minorities and women (Maxwell, 1979).

The skills that are taught in these special programs have varied, but generally they are based on improving a student's basic communication skills, e.g., reading and writing, and sometimes arithmetic. However, experience has suggested that additional skills needed to be added to the "curriculum". These are known as study skills. Initially, the important study skills were identified by non-empirical methods or by inference. Eventually more empirical procedures were developed to identify factors relating to academic success (Brown, Holtzman, 1953: Raygor, 1980; Schmelzer, Brozo, Thurber, 1982).

Despite the large amount of research that has attempted to identify necessary skills for college success, we still cannot predict with much assurance who will and who will not succeed in college.

The present study grew out of an interest to explore student success and failure using a technique originally developed by industrial psychologists to identify factors leading to success or failure in management and production. This technique, known as the Critical Incident Method, consists of collecting reports of behaviors that are considered "critical" in the sense that they make a difference in the success or failure of a particular work situation (Bernardin, Beatty, 1983). The method is post-hoc and involves asking the subjects or an observer to identify those elements they consider critical to the occurance of a situation. It does not presuppose possible categories of responses that may be elicited by the subject.

METHOD

College students were asked to identify an academic situation where they considered themselves successful and one in which they considered themselves unsuccessful. They were then asked to identify those elements that they considered critical to their success and failure in that situation. These responses were written in essay form and later categorized and tabulated by the authors.

Subjects. Subjects in this study were 50 freshmen students with an undeclared major who were enrolled in an elective reading and study skills course, and 67 junior and senior business majors enrolled in either required, core business curriculum, or business elective courses. All students were enrolled at a state supported regional university located in the mid-South.

Procedure. The students were given the following directions which were printed on the top of a sheet of paper:

> Describe a specific situation when you were especially successful (productive) and a situation when you were especially unsuccessful (unproductive) in a course. Explain why you think you succeeded and failed, i.e., what factors were most influential in your success and failure? Additionally, describe who was/were primarily responsible for your success and lack of success. Please be specific.

These instructions were read and explained to the students by the administrator. Any questions were answered. Students were told that they could remain anonymous and that their responses would be tabulated by group. Additionally, students were told they would be informed of the results of the study. The students were given 30 minutes to complete the assignment.

RESULTS AND DISCUSSION

Table 1 shows the major reasons for success and Table 2 shows the major reasons for failure in the Total Group.

TABLE 1

Reasons for Success in Academic Course-Work by Percentage (n=117)

Reasons	Percentage
Persistent and Active Study	29
Setting Goals, i.e., reasonable yet challenging	27
Maintaining an Effective Time Management System	15
Interested in Topic	10
Good Study Environment, e.g., quiet, classmates encouraged success, friends helped study	19

According to Table 1, persistent and active study is the most common reason given for academic success followed by setting challenging goals. These two reasons comprise the majority of what these students considered necessary for success (56% of total responses). The other critical factors, as seen by the students, are supplementary to the first two, i.e., time management, good study environment, utilization of good study techniques, with the possible exception of helping others learn and having an interest in learning. However, even these may be viewed as supplemental to the first two. For example, interest in a subject may be generated through active study and/or helping others to learn.

Table 2 shows the reasons for failure. Whereas active study leads to success, failure is seen to be due to a lack of study, followed, in order, by poor time management and lack of or inadequate goal setting. It is interesting to note that of the top three reasons given for success, the opposite of these are the primary reasons for failure. All of these reasons seem to be related to an overall inability to organize time, materials and activities.

Other reasons for failure are that the topic is too difficult to master, topic is disliked, the student has a poor or inadequate repertoire of study skills and, least of all, financial problems.

Students indicate that there is more than one reason for success and/or failure. Modally, students give approximately two reasons for failing and three reasons for succeeding. Apparently students see the reasons for failings as less complicated or interactive than those that make up success. Perhaps failure is less difficult to achieve than success -- don't go to class, don't take notes, don't read. However, if a student does read, take notes, and goes to class, it still does not guarantee success. Apparently, certain activities insure failure whereas other activities only alter the probability of achieving success.

TABLE 2

Reasons Students Fail in Academic Coursework by Percentage (n=117)

Reasons	Percentage
Didn't study	32
Didn't follow time schedule	19
Failed to set goals or set poor ones	14

Topic too difficult	12
Inadequate study techniques, i.e., poor concentration, poor organization, inadequate or no notes, didn't attend class	11
Didn't like course/topic	11
Financial problems	1

Interestingly, students see their instructors as significantly contributing to their success and/or failure in a course. Table 3 shows how they distributed responsibility for their success and failure among peers, instructors and themselves.

TABLE 3

Who Students Credit for Their Success and Failure by Percentage

	Self	Peers	Instructor
Success	46	21	33
Failure	55	.5	44

In most instances, students see others as significantly contributing to their success or failure. When a student fails he is more likely to attribute the cause to the instructor than when he succeeds. If he succeeds he is more likely to credit not only the instructor but also peers, such as classmates or roommates. This finding may be partially attributed to the upper classmen's confidence in their skills as evidenced by reaching the junior or senior class level. They expect to pass by the time they reach the upper level since past behavior has resulted in this. Therefore, failure may be externalized.

Although not specifically asked, many of the students mention classroom traits of their professors that they feel contribute to their success or failure. Table 4 lists the instructor traits that lead to success and Table 5 traits that contribute to failure.

TABLE 4

Instructor Attitudes and Behavior That Contribute to Student Success by Group

		Percent	
Attitudes	Total (n=59)	Freshmen (n=18)	Jr./Sr. (n=41)
Enthusiastic about subject	15	15	20
Obviously likes to be with students	10	17	10
Exhibits sense of humor	1	2	0
Behavior			
Gives specific criteria for grading	3	0	10
Reviews for tests	5	8	6
Well organized class and lectures	13	20	17
Gives good examples	12	13	24

TABLE 5

Instructor Attitudes and Behavior That Contribute to Student Failure by Group

		Percent	
	Total	Freshmen	Jr./Sr.
Attitude	(n=59)	(n=18)	(n=41)
Didn't care about topic	17	17	16
Created anxiety in class	15	10	0
Personality conflict	15	0	22
Behavior			
Does not review for tests	3	12	0
Is not available for help	7	11	5
Covered material too fast	15	23	12
Gave no or poor examples	10	11	10
Not prepared for class	10	17	7
Poor classroom control	2	5	0
Poor English, e.g., hard to understand because of accent	2	5	0

As can be seen from Table 4, several instructor behavior traits that contribute to success stand out. Compared with the freshmen, juniors and seniors more often mention the following: 1) Instructors who exhibit an enthusiastic and positive attitude toward their subjects. 2) Good examples given in the lectures to support an idea, i.e., concrete, practical. 3) Grading criteria that is unambigious and precise.

Freshmen feel that an instructor who obviously enjoys his students and exhibits a sense of humor is important for their success.

Traits that both groups feel are important include reviewing for tests with the class and being well organized in class structure and in lectures.

Table 4 shows that there is considerable agreement regarding traits that both groups consider as leading to failure. However, freshmen see the following as more important: An instructor who, 1) causes anxiety in the class by making threats or insulting the student; 2) does not review for tests; 3) is not readily available outside of class time for individual conferences or questions; 4) covers the material at too fast a pace; 5) is not prepared for class; 6) has poor classroom control; 7) cannot speak English in an understandable manner, is undesirable to students. Both groups feel that a professor who doesn't care about the subject or conveys this feeling to students and/or does not give good examples in his lectures is a contributor to failure. Freshmen tend to be much more concerned with instructionally related behavior than do juniors and seniors. Juniors and seniors are more concerned with the professors' attitude toward them and the criteria upon which they will be evaluated. A possible reason for this latter difference may be that freshmen need more help in adjusting to the learning demands of college. Upper classmen may have already learned how to learn, sometimes in spite of their professors' instructional behavior, or they learn to avoid professors who are poor teachers. Overall, students listed about twice as many instructor traits that contribute to their failure as they do to their success.

CONCLUSIONS AND RECOMMENDATIONS

Success and failure in college is a complex and dynamic interaction between a wide variety of variables. Such complexity makes it relatively difficult to specify the functional form of a valid model, let alone yield accurate predictions on success or failure. Although there are some differences between freshmen and upper classmen in this sample, there is much agreement in regard to the factors that make up success and failure.

Determining the crucial factors in academic success has been an elusive search. This study suggests that there is a better probability of finding these critical factors if the search is narrowed to specific courses rather than looking for critical factors necessary for overall college success. The former may be the value of the Critical Incident Technique. The findings generated by the utilization of this technique may provide the basic ingredients for determining the recipe of conditions responsible for academic success or failure. In other words, micro is the name of the future in studying factors leading to college success.

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LETTING GOLDEN CHANCES PASS THEM BY:
SHY STUDENTS IN THE COLLEGE CLASSROOM

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Eric Smith is a sophomore majoring in botany. No one seems to know Eric at the University. He stays to himself and this avoidance of others has labeled him as being aloof. As is the case for his other classes, Eric arrives early for each class meeting of Western Civilization. He immediately proceeds to the rear of the room, quietly slips into a desk, and opens his notebook. There is no interaction with other students as he prepares for class. When the period begins Eric positions himself so he cannot be easily seen by the instructor. During discussions and class activities Eric's participation is minimal. He does not volunteer and when called upon his brief responses are tentative, his voice is quivering, and his heart is pounding. His performance on both tests and written assignments are above average, and in fact, displays some insight and critical analysis. The inconsistency between Eric's written work and his oral class performance puzzles the instructor. One day after class when questioned by the instructor regarding his lack of participation, Eric responds, "I guess I'm just shy."

Unfortunately this episode is not a rare occurance in the college classroom; in fact every quarter this author has identified students replicating Eric's performance, a performance that has negative consequences for these students, the student's peers, and the classroom instructor. Of course, shyness is not just a classroom phenomenon; rather, it has been identified as a widespread and even epidemic problem throughout our society. A major study by Philip Zimbardo (1977) established that shyness is pervasive to the point that 80% questioned in his sample reported being shy at some interval in their lifetime. Earlier research of university and high school students found that 40% judged themselves as presently shy (Zimbardo, Pilkonis and Norwood, 1975). In fact, an estimate is projected that 40% of all Americans consider themselves shy and more than 50% of that group regard shyness as a serious personal problem (Leary and Schlenker, 1981; Powell, 1979). There is speculation that this problem could become even more widespread given societal trends toward competition, geographic mobility, technology, and isolation.

Shyness is a blurred concept due to the varieties of definitions, its individualistic qualities and behaviors, and causal factors. Definitions range from asking people to accept or reject the shy label (Zimbardo, 1977) to the avoidance of social interactions and failure to participate appropriately in social situations (Avery, Haynes-Clements, and Lamke, 1981). Generally most definitions of shyness focus on distress and anxiety that some individuals encounter in social situations. This anxiety hinders their social lives. The common denominator in shy people appears to be fear; a fear of responding, a fear of rejection, a fear of failure, and a fear of intimacy. This apprehension is not the same intensity for each shy person, and in fact, for some people it is a public issue and for others a private phenomenon. For example, in the episode that introduced this paper, Eric Smith is blatantly shy in public and avoids a number of people in various environments. However, many people are quite different and experience shyness in private, or in other words, they have been able to cover their shyness with a veneer of flamboyance, by avoiding certain situations, or by over-investing nervous energy. Shyness is a trait that can be openly manifested or well-hidden; it is also highly individualistic. Where one person experiences shyness, with whom, and to what degree can be very different than another individual.

In addition to the various definitions as well as situational qualities the boundaries of shyness are further blurred by the various manifestations of the problem and its interrelationship with other attitudes and feelings. Just as people outwardly react differently to shyness, the physiological symptoms are also varied in type and degree. Although there are numerous physical symptoms of shyness, those that are consistently identified are the following: blushing, increased pulse rate, queasy stomach, sweating palms, excessive perspiration, stammering, and weak knees (Powell, 1979). Each of us has experienced some of these feelings of discomfort, but those that are shy experience them more often, concentrate on these symptoms, and in fact experience them in advance of social encounters. They are constantly guarding their egos and this protective stance results in profuse tension and worry. Shy people are preoccupied with self and overly concerned with evaluations by others; evaluations they presume will be negative. What will people think? This is the question foremost on their minds rather than the more positive focus of having something to offer.

Along with excessive self-consciousness and various physical manifestations, there are a variety of feelings and actions that appear to be intertwined with being shy. Shyness has been identified with limited social competence (Crozier, 1981), low self-esteem (Girodo, Dolzenroth & Stein, 1981; Zimbardo & Radl, 1981), guilt (Fehr & Stamps, 1979), loneliness (Cheek & Busch, 1981), insecurity (Cheek & Buss, 1981), communication avoidance (Beatty & Beatty, 1976; Daly & McCroskey, 1984; McCroskey & Richmond, 1982), and anxiety (Pilkonis, 1977a; Traub, 1983). It appears from these studies that shy behavior may result from numerous contributing factors. In addition to multiple causal factors, two over-riding perspectives regarding shyness have emerged in the literature. A few authors have rooted shyness to at least some degree to an inborn personality disposition (Buss, 1984; Cheek & Buss, 1981; Daly & Friedrich, 1978), but all of them are quick to stress that this is only a partial explanation. The vast majority of studies, however, emphasize environmental rather than heredity factors. The authors of these investigations accentuate how individuals have been socialized within their families, peer groups, school systems, work places, and religious institutions. An example of this socialization process is a school environment that reinforces a child for being silent and not for appropriate communication. A person learns to repeat behaviors that are rewarded.

To date there is not a single all-encompassing definition of shyness and there is less than a clear understanding of the relationship between shyness and other types of fears and anxieties. This paper is not an attempt to put this problem in sharp focus or to provide a more adequate definition, but rather is an effort to raise the consciousness of educators to the following facts: shy students are present in the classroom; shyness is a handicapping condition; and shyness is a problem that can be addressed within an academic environment, and more specifically can be addressed by individual instructors in their classrooms.

As indicated earlier, people are shy for various reasons; therefore, no single approach to the problem is a panacea. In fact, with shyness having personal properties and being situation specific there is evidence for treatment to be tailored to the individual (Leary, 1983). The classroom is not the appropriate arena for extensive personal treatment for shyness; nor are educators, in most cases, appropriate people to offer such treatment. College educators, however, are in position to recognize the problem and its consequences. Keeping this in mind they can consciously design courses or entire curricula that at best, influence in a positive manner some of general attitudes and behaviors of shy students, or at the very least, do not further aggrevate these students' social anxiety.

To ascertain if shy students are present in the classroom the author administered the Social Reticence Scale (Jones & Russell, 1982) at the first meeting of the Introduction to Social Work class in fall quarter, 1984. This class was selected for two reasons. First, the students would have little or no previous contact with the instructor. Secondly, the instructor will be teaching this same course in winter and spring quarters, and, therefore, will have opportunities to enlarge the sample. The Social Reticence Scale, a 22-item measure of dispositional shyness, was adopted due to time limits, ease of administration, and evidence of validity and reliability (Jones & Russell, 1982).

This self-report instrument contains items which reflect attitudes, feelings and experiences of individuals who see themselves as shy (see

Appendix A). Students were asked to respond by indicating the extent to which each statement was typical of them. The responses ranged from 5 (very typical of me) to 1 (very untypical of me). The twenty-five students enrolled in this course voluntarily completed the questionnaire as well as a demographic data sheet. Due to the limited number, as well as the lack of racial and sexual diversity in this sample, an indepth analysis will be delayed until future Introduction to Social Work classes can be surveyed. For the purposes of this discussion, however, it is suffice to say that nine students (36%) who completed the instrument obtained a mean score of 2.54 or above, with four of these students averaging more than 3.0 (see Appendix B). One item on the instrument requests individuals to respond to the statement, "Basically I am a shy person." It is interesting to note that five students (20%) labeled themselves in this manner by indicating that declaration was "very typical of me" or "somewhat typical of me." Although very few findings can be drawn from this sample there appears to be a small, but significant proportion of the students in this class that perceive themselves at the very least, situationally shy and find themselves with a handicap due to their inhibition, self-doubts, and lack of social skills.

Although shy students are not a homogeneous group, generally they are afraid of other people. They have difficulty initiating and developing relationships with others, so often they opt for the security of isolation. This readiness to avoid others leaves shy students with the sense of being "on the outside looking in" on the college experience. This lack of engagement destroys part of what it means to be human since these students will not take a risk and ask for assistance nor will they experience the joy of giving. Due to this lack of giving and receiving these students do not encounter the benefits of quality friendships and learning from others.

Shy students' behaviors are often puzzling to others. Their silence and lack of participation are misread by their peers as demonstrations of being condescending, bored and aloof (Pilkonis, 1977a). In addition, since shy students view themselves as being inept at meeting their own goals, they expect and project that others consistently function on a superior level (Kough, 1980). These unrealistic expectations and limited levels of tolerance tend to alienate the shys and nonshys.

Inside the classroom shy students tend to communicate in a minimal fashion; in fact, they often avoid courses that require extensive discussion and gravitate to large lecture classes. When they do speak, often it is in a style that depreciates their message (Freimuth, 1982). Negative self-talk is a norm for shys. For example, a shy student might say, "I doubt if this is important, but...", or "This is a stupid question, but..." Shy students are not assertive leaders but rather passive followers. Their preoccupation with self as well as their anticipation of negative evaluation hinder the communication process not only in terms of initiating conversation or asking questions, but also in terms of active listening and thorough observation. Effective communication is important to learning; those who communicate less, learn less (McCroskey, 1977). Given this finding it is not surprising that shy students attain lower academic achievements (Freimuth, 1982; McCroskey, 1977). Of course, with shy students present in the classroom everyone has the potential to lose. With the flow of communication being restricted, all participants - the shy students, their peers, and the instructor - are denied new insights, creative reactions, and opportunities to further understand each other as well as themselves.

Shyness is not only a barrier to academic accomplishments, but it is just as destructive to occupational success. Shy students withdraw from other students and also distance themselves from faculty. They do not informally associate with faculty and will not visit faculty during office hours unless formally requested to do so. Given this behavior, faculty do not know shy students as unique individuals and this is problematic when requested by potential employers to write letters of support. Shy individuals are initially perceived as weak job candidates by potential employers due to their communication patterns and the lack of leadership qualities (Powell, 1979). Even if hired, shy individuals experience difficulty in being promoted since they hesitate to make the necessary social and organizational contacts and fail to demonstrate self-directed behavior. Shyness is a hinderance in and outside of the classroom to the extent that these students "miss what is truly best in college" (Zimbardo & Radl, 1981, p. 208), and it continues to impede these individuals once they leave the academic environment.

How can faculty assist shy students so that they can gain "what is truly best in college" and reach their potential in their post college years? One approach a college or university can explore is the establishment of a shyness clinic. This resource addresses shy students' debilitating anxiety and negative self-evaluation and in so doing offers anxiety management, assertiveness training, and interpersonal skills development (Barrow & Hayashi, 1980). Where implemented these clinics have been extensively utilized and have displayed favorable results (Powell, 1979; Zimbardo, 1977). On most campuses, however, these special treatment programs are not available due to limited funds, expertise and/or staff (Hoffman & Sprague, 1982).

With the absence of formal personalized treatment on most campuses, individual instructors are in the next best position to intervene on behalf of shy students. Educators cannot ignore the knowledge-base and skills associated with their disciplines to focus on shyness, but they can consider this problem as they organize and teach their classes. A course syllabus that identifies objectives, requirements, assignments and grading policy, structures the learning environment. The literature regarding shyness stresses that anxiety is reduced with a sense of order (Brockner & Hulton, 1978); Kough, 1980; Leary, 1983; Pilkonis, 1977a). A thorough syllabus provides ground rules and expectations for students, and if these rules are placed within the context of a supportive, trusting environment the chances for interaction are greatly enhanced.

Using students' names, allowing them to sit where they wish, and calling on students whose hands are raised or whose nonverbal actions are indicating a response assist in constructing an understanding and accepting climate. When checking the roster briefly interact with students to reinforce their individuality and to encourage responses. Encourage responses, but do not force responses by calling on students when there is no indication of wishing to speak. The literature on shyness consistently emphasizes that educators who call on anxious students may have the best intentions but are magnifying the problem (Beatty & Beatty, 1976; Kougl, 1980; Pilkonis, 1977a). This may be analogous to pushing a non-swimmer into the deep end of a pool; there can be tragic results. Remember, shy students feel inadequate and are overly self-conscious; calling on them when they are not ready or able to respond provides another episode of failure and an increase of frustration.

Shy students have to be gradually introduced to class involvement (Beatty & Beatty, 1976). Begin by placing all students in small groups for the specific purpose of getting acquainted with each other. Proceed throughout the course to utilize small groups to discuss, assess, and analyze important topics and issues within the discipline. In terms of each activity, vary the composition of the group, specify the purpose of the assignment, discuss what is to be done, establish a time-limit, and identify the expected final product. The structure of these group activities is essential to reduce ambiguity and to direct the attention of the shy students off themselves onto the given tasks (Brockner & Hulton, 1978; Brodt & Zimbardo, 1981). Implementing this type of small group strategy allows students to know each other, to become more comfortable in the class, to observe and practice interpersonal skills, as well as to struggle with course content. The expected outcome of each subsequent group activity becomes gradually more demanding in an effort to increase self-confidence. The goal is to build on successful experiences as students attempt tasks that they perceive are at their present level of competence (Girodo, Dolzenroth & Stein, 1981).

The utilization of small groups contributes to an atmosphere in which students feel more secure to participate in class-wide discussions. The atmosphere can be further cultivated by instructors modeling appropriate social behavior. Students are encouraged to speak when they are furnished opportunities to do so without interruption, provided positive reinforcement for their efforts, and most important, if they feel safe to make mistakes. Normally, shy students expect too much from themselves and too much from others. Imperfection is a part of the human condition that they have ignored. This human reality can be demonstrated in the classroom when educators recall some of their past blunders and recognize that everyone has concerns, fears, and faults. These comments allow shy and nonshy students, as well as educators and students to be more tolerant and sensitive to each other's needs.

What is being taught in addition to content is trust and tolerance. In such a climate individuals are more willing to take risks. Social skill development and improved self-concept are essential to diminish shyness (Pilkonis, 1977b). Both of these areas can be addressed by carefully designed courses which provide students opportunities to understand and support each other and to observe and practice interpersonal skills and which provide instructors opportunities to furnish constructive feedback and to model appropriate social behavior.

Shy students are at a serious disadvantage in the academic world. Their social anxiety, fear of evaluation, limited social skills and lack of self-confidence impede their inquiry and involvement in the educational process. Their behavior is reflective of a line from the song, "If I Loved You," from the musical production, Carousel, (Rodgers & Hammerstein, 1945), which goes "...afraid and shy I let my golden chances pass me by." Classroom educators who are conscious of the consequences of shyness are in a position minimize or prevent this destructive pattern of behavior by offering a class environment and learning opportunities that encourage involvement with and exploration in "golden chances."

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Appendix A

Social Reticence Scale *

Please respond to the following questions by indicating the extent to which they are true or typical of you using the following format:

5 — Very typical of me
4 -- Somewhat typical of me
3 — Sometimes true, sometimes not true of me
2 — Somewhat untypical of me
1 — Very untypical of me

____1. I frequently have difficulties in meeting new people.

____2. I frequently feel depressed or sad.

____3. I have a hard time expressing my opinions to others.

____4. Even my friends don't seem to know me very well.

____5. Many people apparently think that I am unfriendly.

____6. It is difficult for me to think clearly in the presence of others.

____7. I am very self-conscious.

____8. It is difficult for me to make new friends.

____9. I frequently feel isolated from other people.

____10. I have difficulty being assertive, even when it is appropriate, or I need to be.

____11. Most people don't know what I'm really like.

____12. Many people may think I'm snobbish or bored because I'm not more outgoing.

____13. It is difficult for me to know what to say in a group.

____14. Frequently I am preoccupied with my own feelings and reactions.

____15. I frequently avoid or don't enjoy potentially good experiences.

____16. I often feel lonely.

____17. I usually keep quiet in groups, even when I have something to say.

____18. Even many of my friends don't know any of my true assets.

____19. I'm afraid many people think I am weak.

____20. I often have difficulty in communicating effectively.

____21. I wish that I wasn't so sensitive to my own thoughts and feelings.

____22. Basically I am a shy person.

* The author has received written permission from Dr. Warren Jones to utilize this instrument.

Appendix B

```
                                                        Sometimes true,
           Very              Somewhat                   Sometimes not   Somewhat   Very
           Untypical         Untypical                  true            Typical    Typical
           1.0               2.0                        3.0             4.0        5.0
Student A ---(1.05)

        B-----(1.09)

        C------(1.14)

        D-------(1.23)

        E--------(1.27)

        F---------(1.59)

        G----------(1.81)

        H-----------(1.86)

        I-----------(1.86)

        J------------(1.91)

        K------------(1.91)

        L--------------------(2.05)

        M---------------------(2.23)

        N----------------------(2.32)

        O-----------------------(2.45)

        P------------------------(2.48)

        Q-------------------------(2.54)

        R--------------------------(2.63)

        S---------------------------(2.68)

        T----------------------------(2.77)

        U-----------------------------(2.86)

        V--------------------------------------(3.09)

        W---------------------------------------(3.36)

        X---------------------------------------(3.36)

        Y-----------------------------------------------(3.63)
```

USING COMPUTERS IN TEACHING

WEDNESDAY, 3 JULY

1030 - 1200

THE DESIGN AND EVALUATION OF A COMPUTER-BASED INSTRUCTIONAL SYSTEM TO AID WRITING

Morton P. Friedman
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WANDAH (Writing-aid AND Author's Helper) is the product of a research effort at the University of California, Los Angeles aimed at studying the use of word processors in the teaching of writing. The research was funded mainly by a grant from the Exxon Education Foundation.

The project grew from two observations: First, writing -- especially revising, is, for many people, easier on a word processor than on a typewriter. Second, there is the intriguing suggestion that the writing process itself may be different on a word processor.

For example, Patricia Greenfield, in her recently published book, Mind and Media, notes the following about word processors and the writing process: "I was impressed by the changes it made in my thought processes and productive ability: I felt that I could write more quickly and more easily; revision becomes a pleasure rather than a chore." (Greenfield, 1984, p. 137)

As the project developed, WANDAH became much more than a word processor. WANDAH became an integrated system of aids to help the writer in all phases of writing - planning and organizing ideas, transcribing ideas into print, and editing and revising. The development team for WANDAH (see Footnote 1) was an interdisciplinary group representing psychology, instructional technology, computer programming, composition instruction, and English as a second language.

THEORETICAL BASES FOR WANDAH

We believe that WANDAH is one of the first of a new generation of educational software. WANDAH has at least a modicum of intelligence, and in her we see the beginnings of an "expert system" to aid the writer (Walker and Hess, 1984).

WANDAH is based on research in three overlapping areas: First, the overall design philosophy of WANDAH is based on a cognitive model of the writing process proposed by Hayes and Flower (1980). This model views writing as a dynamic process with many constraints. The writer is trying to get ideas into words, use correct grammar, be attentive to the intended audience, write with correct spelling and punctuation, present an organized argument, etc. Writing is difficult because the writer has to deal simultaneously with all of these constraints. The essence of WANDAH is this -- a design philosophy and a "tool kit" of heuristic devices to help the writer to deal with the above constraints and avoid cognitive overload. The "tool kit" approach also means that WANDAH is designed to handle wide individual differences in writing ability and style.

Second, the actual implementation of WANDAH on the computer is based on recent Human Factors research on the human-computer interface (Card, Moran and Newell, 1983). WANDAH is thus based on the user's representation of the problem, not the programmer's view. WANDAH's design involves a minimum of computer jargon, good screen and keyboard design, excellent error correction and an extensive online "help" facility.

Third, WANDAH uses many of the heuristics and teaching methods of modern composition pedagogy. Indeed, many of the ideas for WANDAH came directly from composition teachers who told the design team what they wanted in a computerized writer's aid designed for teaching.

THE WANDAH SYSTEM

The WANDAH system is outlined in Figure 1. It is a hierarchical, completely integrated system that permits the writer free and easy flow amongst its various parts via an extensive menu system.

THE WORD PROCESSOR. A "user-friendly" word processor especially designed to facilitate composing (as contrasted with producing final copy) is the heart of the WANDAH system. The complexities of learning to use a commercial word processing system can introduce a "computer overload" that will reduce the benefits of composing on the machine. Much care was taken in designing WANDAH's word processor to create a system that is easy to learn and to use. WANDAH has an on-line tutorial, an extensive menu system, an on-line help system and special labelled function keys. It uses the common expressions of English composition rather than computer jargon. The word processor itself is a full screen editor with one or two "windows" onto the text. This allows students, for example, to have an outline on one window and their paper on the other. Or they may have two parts of the same paper, or two different papers on the screen at one time.

PREWRITING PROGRAMS. WANDAH presents a variety of pre-writing aids to suit different writing and teaching styles. Writers can use the aids at any time and in any combination.

1. Nutshelling--This prompts the writer to type the purpose and audience of the paper, and to compose a brief summary of its main ideas.
2. Invisible Writing--Many writers have trouble overcoming the urge to edit each line as it is composed. This program turns off the screen so that writers cannot see the text. The purpose is to "unblock" the writing process: because they cannot see the actual words, they must keep their works' ideas and structures constantly in mind.
3. Freewriting--The program urges writers to keep typing without pause; the

screen blinks if the writer stops typing for more than a few seconds. Writers may not correct errors or edit while they are freewriting.

4. Planning--This asks the writer for the title and main idea (thesis) of the paper, and then for arguments supporting it and possible counter arguments. Once the writer has supplied these, the program allows the writer to select and organize the arguments in to a coherent outline.

For all of these prewriting exercises, the work may be saved and later edited or expanded with the word processor.

REVIEWING AND REVISING AIDS. Once the writer has created some text--whether a complete draft or only a portion--he or she can subject it to one of the four sets of reviewing and revising aids.

1. Revising for Mechanics--This goes over the text and highlights the following common problems:
    (a) Punctuation--points out unpaired parentheses, quotation marks, and brackets, as well as possibly improper placement of punctuation (e.g., periods, commas) within quotation marks and parentheses.
    (b) Word Usage--highlights words that inexperienced writers often confuse or misuse. The writer may request on-line explanation of the possible difficulty.
    (c) Spelling Checker--checks all the words in the text against a stored dictionary and informs the writer that unrecognized words may be misspelled.
2. Revising for Style--This program helps writers see certain stylistic features of their texts: abstract words, prepositional phrases, selected gender-specific (and possibly sexist) nouns, "be" verbs, and possible nominalizations. It also provides an analysis of sentence length and paragraph length. The analyses may be printed out.

3. *Revising for Organization*--These aids help writers to analyze the organization of their work. The writer may get printouts from each aid.
   - (a) Nutshelling--Similar to the prewriting Nutshelling routine, this tells the writer to compose a nutshell without viewing the draft.
   - (b) Summary Outline--WANDAH presents two outline choices. The writer may receive an outline made up of the first sentence in each paragraph, or the writer may pick the *one* sentence out of each paragraph that best presents the paragraph's main idea.
   - (c) Transition words--This highlights more than 200 selected transition words and phrases, and asks the writer to consider whether or not the paper contains smooth transitions between ideas and points. Too few transitions may mean that the individual ideas are not sufficiently developed. This aid will also highlight nearly 50 pronouns ambiguously and without a clear reference to previously mentioned ideas.
4. *Commenting Facility*--Writers need readers, and knowing how readers react to a written piece can help writers improve their writing. Commenting allows student writers to read each other's work and make comments. Writing teachers or other reviews may also use this aid to insert comments into papers.

College, junior college, and high school composition students are this program's primary audience. WANDAH may also prove useful to students in advanced college classes, and writers in academic and non-academic settings.

WANDAH runs on the IBM Personal Computer. All of the programs in the WANDAH system are written in UCSD Pascal to make them transportable to a number of different microcomputers.

EVALUATING WANDAH

WANDAH is currently being tested at the University of California, Los Angeles and other institutions. Our initial informal evaluations are very positive. High school and college composition students learn to use WANDAH without difficulty. Both students and teachers are enthusiastic about WANDAH and teachers report that its use improves students' writing. These findings are encouraging but should be viewed with caution. The novelty of the computer and the enthusiasm of interested teachers are powerful variables that might account for our initial positive results.

Indeed, a fair evaluation of WANDAH is extremely difficult to set up because of the novelty effect and the further difficulty of controlling other critical variables such as time spent on the writing task and the nature of the curriculum.

A recent review of research on learning from media by Richard Clark speaks directly to the issue of evaluation. Clark's conclusion is that "Media (including computer-aided instruction) do not influence learning under any conditions...The best current evidence is that media are merely vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition." (Clark, 1983, p. 445)

Put very simply, Clark's argument is that the method of instruction, and not the medium of instruction, affects learning. In the case of WANDAH, this means first, that any simple WANDAH/non-WANDAH comparison wouldn't be sufficient because the method of instruction such as the various prewriting and revising heuristics has not been controlled. Experimental comparisons could be set up with some groups using different heuristics available on WANDAH vs.

paper-and-pencil, but these experiments are too contrived and of questionable relevance to the use of WANDAH in real writing situations.

So what are we left with for an evaluation? We think that our best investment of effort at this time is in research on understanding and improving WANDAH rather than comparing it with contrived alternatives.

Five English composition classes used WANDAH as part of the curriculum or as a curriculum supplement during the Spring Quarter, 1984. A laboratory with 16 IBM-PC computers was established for the evaluation. The lab was open twelve hours per day, seven days per week. Pre- and post-course writing samples were obtained, and students filled out questionnaires concerning WANDAH at the end of the course. The writing samples are still being analyzed at the time this paper is being prepared.

Analysis of the questionnaire data revealed that students expressed universally positive feelings about WANDAH. They felt that they used their time more efficiently (90%), learned to write better (88%), revised more (88%), and gained some computer competency (91%). An overwhelming number of students would recommend WANDAH to their friends (93%), would like to use WANDAH again (91%), and would sign up for another English class that used WANDAH (84%)--even some that disliked English classes! Teachers were very enthusiastic about WANDAH. They felt that students morale was better and that students were more interested in composition as a result of using WANDAH.

THE FUTURE OF WANDAH

We have just argued that one reason WANDAH may be effective is because it employs the methods that good teachers use. But what about the future? Will the computer bring fundamental changes in the way we write and do research?

We conjecture as follows: We might be seeing in WANDAH the beginnings of a more generally useful problem-solving tool for writing and doing research--a cognitive amplifier in the sense that the industrial age produced machines that amplified human physical abilities. The next generation, more intelligent SUPER-WANDAH will have a better knowledge of language and will be able to offer more accurate advice on style and grammar. She will have a variety of templates and outlines to prompt the user in organizing ideas. SUPER-WANDAH will also allow the user to interact through an intelligent, expert tutor with various data bases of knowledge. The user could thus take notes, try out different structures, search for relationships, and test hypotheses. The user will further be able to direct SUPER-WANDAH to synopsize or abstract relevant information.

This SUPER-WANDAH of the future would certainly do a better job of allowing us to deal with our cognitive load--the constraints on our organizing ideas and writing. But it just might also be a quantum leap in amplifying our problem-solving skills. This is the true promise of WANDAH. It is a research question for the future as to whether in such a SUPER-WANDAH, the argument given earlier about the confusion of medium of communication and method of instruction is no longer valid. If so, then in a SUPER-WANDAH, the medium becomes the method (or vice-versa).

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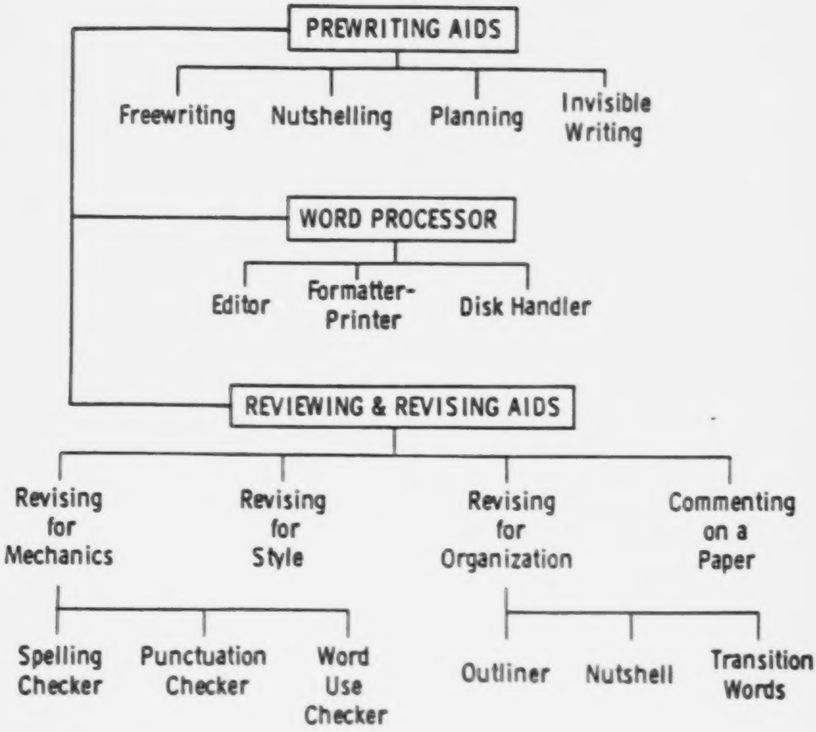
FOOTNOTE

1. WANDAH was developed at the University of California, Los Angeles, by the Word Processor Writing Project under a grant from the Exxon Education Foundation: Morton Friedman and Earl Rand, Principal Investigators; Ruth Von Blum, Project Director; Michael Cohen, Principal Programmer; Lisa Gerrard, Design Consultant; Andrew Magpantay and Susan Cheng, Assistant Programmers.

This program will be published in a commercial version by Harcourt Brace Jovanovich, Electronic Publishing, 1250 6th Ave., San Diego, CA, 92101.

WANDAH

Writing aid AND Author's Helper


PREWRITING AIDS
Freewriting
Nutshelling
Planning
Invisible Writing
WORD PROCESSOR
Editor
Formatter-Printer
Disk Handler
REVIEWING & REVISING AIDS
Revising for Mechanics
Revising for Style
Revising for Organization
Commenting on a Paper
Spelling Checker
Punctuation Checker
Word Use Checker
Outliner
Nutshell
Transition Words

VITAL: A VIDEOTEX INTEGRATED TEACHING AND LEARNING SYSTEM FOR EDUCATION AND TRAINING

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1.0 Computer Based Learning Systems

The computer has been actively pursued as an educational tool for at least the past twenty years (Alpert and Bitzer, 1970). Prior to that for a short period, intense activity with structured learning materials was carried out under the Programmed Learning movement. The emergence of the mainframe computer and then the minicomputer saw a considerable amount of programmed instruction activity shift from the mechanical teaching machines first introduced by Pressey to the newer electronic medium. The linear programming associated with the Skinnerian approach ceased to be a major limiting constraint as the new computer technology allowed a vastly enhanced branching capability.

The most publicized computer applications research of the past two decades has been associated with the PLATO project begun by Bitzer in 1960 at the University of Illinois, Urbana, and then commercially marketed by the Control Data Corporation since 1970.

With the emergence of the microcomputer and the programmable videodisc the number of institutions interested in the use of computer based systems for instruction has exploded. Several universities such as Carnegie-Mellon, Brown and M.I.T. (Tucker, 1983) have put in place major programs to increase the use of the microcomputer by faculty and students. The University of Maryland, M.I.T. and Brigham Young University have extensive projects in using computer-driven videodisc units for instructional purposes.

From this activity several broad generalizations may be drawn to assist educators in their use of this new technology and to indicate limitations to its widespread adoption which are frequently unspoken in the face of its very impressive achievements.

1.1 It works. Evidence of the application of computers to educational tasks shows that it can be a very effective instrument. In CAI type applications it has been shown to be a "tireless tutor" providing consistent feedback to students, on more or less routine and mundane material, that is tedious, dreary and unrewarding to the live teacher.

1.2 It is time consuming. Estimates vary on the amount of time required to construct computer based learning materials but a range of 100 to 400 hours of preparation time for every hour of usable instructional material provides a guide to its time consuming demands.

1.3 It is costly. The cost of preparing and using computer based materials may be presented in very attractive, cost efficient terms of a few cents per hour. These projections frequently presuppose an extensive number of students using the system to achieve the economics of scale associated with cost effective projections. There are absolute costs, however, which require a large "front-end" commitment prior to achieving the economics of scale attributed to its cost effectiveness. The problem here is that the cost benefits may be constructed in isolation of the other demands on the instructional dollar. Since approximately 80% of the educational dollar is locked into personnel costs of a long term nature, the size of the computer commitment in absolute terms may place an inordinately heavy demand on the 20% of the non-salary educational budget.

1.4 It requires special skills. Designing computer based learning materials requires either extensive computer programming skill or access to skilled staff with programming and computer language skill. A number of course authoring languages such as PILOT, MicroTICCIT, TUTOR and Encore have been devised to assist instructors in the task of creating instructional materials. These are higher level languages which do not require extensive computer language ability; they do, however, require a degree of mastery of their own authoring protocols. This requires some additional investment of time and effort and it is not at all clear that the prevailing reward structures will recognize this activity seriously.

1.5 The use of computers for instruction is distinct from the demands for computer literacy. The increased access to lower cost personal microcomputers and the growing availability of good quality software such as word processing, spreadsheet and file management packages has opened up the use of the microcomputer as a valuable tool for both faculty members and students. This has led, in a number of universities, to the formulation of plans to provide students with computer literacy or computer competence. A survey among Land Grant University Teaching Deans found the majority favouring opportunities for students to know how to use the computer as an effective tool in their disciplines (Braanstrom, 1984). However, while this use of the computer as an effective working tool and the need for today's students to demonstrate computer competence has become an issue of university instruction, it is not the same issue as using computers for instruction. Pylyshn (1984) identifies four categories or ways in which computers are relevant to university education. The first is as a tool to enhance the instructional process itself. The second is the use of the computer to carry out scholarly activity such as statistical analysis, automated cataloguing, file management, word processing, etc. The third is the discipline of computer science and the fourth is the broad impact of computer technology on society as a whole and its impact on shaping the lives of people. Thus the instructional uses of the computer are specific and distinct from the other three. For the sake of clarity it is important that these distinctions are kept in mind when discussing computers in higher education.

2.0 A Pilot Study in Using Computer Based Videotex Instructional Materials

In 1982 the University of Guelph received an equipment award of $76,000, on a matching funds basis, from the Industrial Investment Stimulation Program (IISP) of the Canadian Department of Communications. The award specified three areas of study and application: an agricultural information service, an on-campus electronic information service for staff and students and the use of Telidon in teaching (Moore, 1985).

2.1 System and Equipment. The first area of study, agricultural information, was undertaken in 1983 as a joint venture with Infomart, the owners and operators of the "Grassroots" service for farmers based in Winnipeg, Manitoba. This service began in April, 1981 and at the time of the Guelph study was limited geographically to the Western Prairie provinces. In April 1983 it began operating in Ontario through the University of Guelph's trial and in July 1984 the service expanded into the eastern USA as "Grassroots America".

The joint project gave the University immediate access to the considerable computing resources and to the expertise of the Infomart staff which were in place to support several commercially operating Telidon services. It was possible for the University's instructional applications project to be mounted "piggy-back" on the agricultural service. The computer equipment available comprised a VAX750 and a VAX780 with Infomart Telidon System Software located in Winnipeg. These computers and software carried the database and provided the system's traffic control.

A dedicated dataroute line was purchased between Guelph and Winnipeg and equipped with a 16 channel concentrator. Two of these channels were used by the University's page creation staff to upload material into the datebase, four were used for the instructional project and ten for the agricultural service.

University owned equipment included two Norpak ISP microcomputer systems for creating the Telidon pages and 50 user terminals of which six were allocated to the pilot study and connected to Winnipeg via the University's computer network and the dedicated dataroute. In operation, a student using the system was connected to the remote database as if it were an on-campus facility.

The initial instructional materials created for the pilot study comprised interactive testing modules for courses in Extension Education, Neuroanatomy, Ornithology, Psychology and Zoology. These courses were selected because of their high visual content and the fact that high quality, low-cost colour graphics are one of the principal characteristics which differentiate Telidon/NAPLPS from other computer systems.

Rogers (1983) lists five key factors in the adoption of innovations in a social system. These are perceived relative advantage, compatibility with existing practices, complexity of the innovation, trialability or the extent to which the innovation can be explored without making a major initial commitment to adopt, and observability or the degree to which the innovation can be seen by others. In the Guelph pilot study an attempt was made to select courses with instructors who had perceived instructional needs to be served by the project, and those whose existing instructional organization was compatible to and could accommodate this computerized application without major reorganization. Three of the courses were using a PSI or Keller Plan type instructional format so the Telidon/NAPLPS materials were adopted to provide student testing and feedback. The other course used the system to present biological graphics and schemata. Only portions of these courses were treated in the pilot study, in keeping with Rogers' principle of trialability.

Only one of the four instructors involved in the pilot study had previous experience with using the computer for instructional purposes, thus for the other three the complexity issue was important. This was handled by using staff in the Telidon page creation centre to work with the faculty members in designing, producing and programming the materials. The role of the instructor was as content authority in determining the material to be presented to achieve the instructional intent and to monitor the work of the design staff to ensure resulting computer material conformed to the objectives.

Information and demonstration sessions for other instructors were held at various points in the project where the pilot participants described their experience and demonstrated their material. Materials are now under development for four more instructors as a direct outcome of this diffusion activity.

Student reaction was measured by surveys taken in the Winter and Fall semesters of 1984. They reported the system as easy to use, the colour graphics of value and expressed an interest in continuing its use (Moore 1985). The opportunity for self-pacing, immediate feedback, individual and group study, the quality and variety of questions, the stimulation of recall and the emphasis on student learning were listed by the students as advantages of this approach.

Herrmann (1984), in a study of students in a third year psychology course, compared student perception of workload and achievement on final examinations using a traditional lecture/seminar format and two computer managed treatment groups. One treatment group received tests on a VAX computer system displaying computer text. The other treatment group received the same test items formatted and displayed via Telidon/NAPLPS. He found that the Telidon/NAPLPS group demonstrated an intrinsic motivation to study which was not evident in either the control group or the computer text treatment group.

Difficulties reported by some students on the several surveys were the sometimes slow response time to their inputs and inflexibility of the system to interpret student responses which were correct in concept but misspelled. They also complained that some test items appeared before they had studied the material in class. There was some frustration that wrong answers or unacceptable responses were judged but not corrected.

Some of these difficulties were related to the limitations of the long distance communication lines or the fluctuating demand on the host computer by the major Grassroots users resulting in variable response time. Other limitations related to the instructional decisions incorporated by the instructor such as the sequence of test items and the handling of incorrect student responses. Fortunately, none of the student objections were of such a nature that they cannot be addressed.

The pilot project indicated the need for a more reliable system with improved response time. The project staff began to work on a microcomputer based system with local network capability. In conjunction with Tayson Information Technology Inc. of Toronto, the team began, in spring 1984, the task of designing and writing software to operate on the IBM-PC system or on compatible work-a-like equipment. The findings from the initial study provided the basis for this software which offers a videotex integrated teaching and learning system for education and training (VITAL).

3.0 VITAL: A microcomputer system for creating and presenting course materials and recording student performance

The VITAL system for education and training operates on IBM-PC type microcomputers using the MS DOS operating system. Its capabilities for student access, content creation, programming and course administration are described in the following section.

3.1 Student access terminals. Telidon/NAPLPS provides the user with a menu driven, user friendly means of retrieving and viewing computer stored graphic and text images. In VITAL this has been expanded to provide branching paths and feedback determined by student response input to machine displayed questions. Current equipment will display eight colours and eight shades of grey. In the first applications of Telidon/NAPLPS a purpose-specific hardware decoder was required to display the computer stored code. Subsequent developments have resulted in several very good software decoders which enable a personal computer to emulate a Telidon/NAPLPS terminal. While the basic terminal allows a single use, the microcomputer and decoder configuration allows for extensive alternate uses of the same equipment for other purposes.

3.2 Content Creation. One of the problems with traditional CAI or CBI is the need for highly skilled computer programming specialists to encode the lesson material (Bates, 1984). Estimates of time required to create one hour of CBI range from 100 to 800 hours. Hofstetter (1982) reports the cost ranges from $2,500 per hour for uncomplicated tutorial material without judging features to $8,000 per hour for simulation material. The instructor, unless accomplished in the required programming skills, is dependent upon computer programmer support.

VITAL has been designed to allow instructors, without computer language skills, to create their own course materials. This is achieved by breaking the overall task into three distinct sub-tasks. The first is the specification of student learning outcomes and planning of instructional content. While assistance may be obtained from course development specialists, this task remains under the control of the instructor.

The second sub-task is the creation of the computer display. At this stage of VITAL's development everything a student sees is created as a "page" or frame and stored in the database as a discrete file. These pages are created in VITAL by selecting from the instructor's main menu the function "to create a frame".

The page creation function uses a menu approach from which the instructor selects basic graphic elements of arc (circle), rectangle, polygon, line and text. Text size and height are selectable and a choice of eight colours and eight shades of grey is available for each of the graphic elements and text.

The terminal used by the instructor for the task is a PC with dual disc drives, 256K RAM, a monochrome monitor and a NAPLPS terminal with RGB colour screen. The frame creation menu is displayed on the monochrome monitor and the frames are created by selecting the desired graphic element which is displayed on the colour screen. Movement on the screen to position elements is achieved using the cursor control and future versions will use a "mouse" or graphic tablet to increase the ease of manipulating the elements.

The second stage of course development is completed when all of the course content has been created as NAPLPS pages or frames. While an instructor may wish to use a teaching assistant or design support staff to create these frames, VITAL is not dependent on specialized computer skills to complete this second stage.

Since each frame exists as a separate file it can be changed, added to or deleted without affecting other files.

The linking of these frames is the third sub-task or programming stage and it is this stage which results in a usable instructional module.

3.3 Programming. The instructional intent has first been articulated in the course plan (stage 1) and the course content has been encoded as NAPLPS pages or frames (stage 2). Stage 3 provides the structure by which these pages are related to each other and are linked to a decision tree for judging student responses and providing feedback.

Again the system uses a menu to set the parameters for controlling the sequence by which the content pages are viewed. Figure 1 shows the sequence of menu prompts through which an instructor will move to program each NAPLPS page.

FIGURE 1 ENTER/MODIFY THE ANSWER PARAMETERS

```
 1 - Question number                     :
 2 - Correct Answer (30 characters max.) :
 3 - How many characters to be correct   :
 4 - Maximum # of characters to be correct :
 5 - Number of tries allowed             :
 6 - Display if correct                  :
 7 - Display if incorrect                :
 8 - Next question low range             :
 9 - Next question high range            :
10 - Next question if correct            :
11 - Next question if incorrect          :

Enter the question number : []

<F1>  SAVE     <F9>   VIEW QUESTION
< >   NEXT   < >    PREVIOUS   <End>  END
```

When VITAL is used to provide testing and feedback modules, the instructor will prepare a page or frame which presents the test item. This is then programmed by using the "Enter/Modify the Answer Parameters" menu as shown in Figure 1.

Step 1 Assigns a question number to the frame. This becomes its file number for retrieval.

Step 2 Specifies the correct or desired response which may be any combination of letters or numbers to a maximum of 30 characters.

Step 3 Specifies the minimum number of characters, (entered on the answer in Step 2) which must be contained in the student answer to be judged correct. For example, if the answer is "metancephalon" the maximum number is 13 but the instructor may wish to allow for minor spelling errors and assign the requirement of 11 characters. A student response "metencephelon" would be judged correct with the two "a" vowels misspelled by "e"s. However, "misencephalon" would be judged as wrong.

Step 4 Sets the maximum number of characters in the string. On multiple choice items students could put in all the possible answers

	without this provision.
Step 5	Students may be given more than one try if the test is to be used as a learning task rather than for grading.
Steps 6 and 7	Assign the message the instructor wishes to give the student when the input has been matched to the acceptable answer as determined by Steps 2, 3, 4.
Steps 8 - 11	Set up a powerful routing matrix according to the parameters specified.
Steps 8 and 9	In combination determine whether the sequence of presentation will be linear or random while Steps 10 and 11 provide branching paths according to correct or incorrect student response.
Step 10	Specifies the next frame or question to be presented following a correct response.
Step 11	Allows for a tutorial remediation branch, a feedback frame suggesting further reading, study, etc., or continuation of the test with the next question as in Step 10.

While the above features of VITAL allow the instructor to create a great variety of learning and test material, successful materials are dependent upon the instructor possessing "good management and learning experience" (McConnell, 1984).

3.4 Course Administration. The VITAL system is controlled by an identification number assigned to the CONTROLLER. This is the highest level of security and can operate the two lower levels of security. It assigns INSTRUCTOR and STUDENT identification and password which enables these individuals to use the system for their level of authorization.

Each VITAL system or installation has a capacity for 250 unique instructional modules which can be assigned to instructors in groups of 10 modules, with each module being unique to an instructor. The system will accept 999 students with each student allocated a maximum of 10 modules.

Records of student achievement are recorded at three levels. At level one the system records test items which have been accessed by a given student. In the random presentation sequence previous items used are deleted on the next random selection. At level two the system aggregates class performance and gives a printed report while at level three each student's performance record can be reviewed individually.

4.0 Conclusion

The University of Guelph's pilot study of videotex as a viable educational medium has provided promising findings of student acceptance in terms of both its use and the quality of instructional materials carried on it. It has found growing acceptance among instructors for the quality of teaching materials which they can create without computer language or programming skills. The experience of the pilot study with a large minicomputer and network communications led the project staff to design and implement a microcomputer based Videotex integrated teaching and learning system which is now undergoing application testing and evaluation with students in-course.

Emerging from this pilot study is the need for further investigation into the nature of feedback given to students via automated testing systems. A related concern is the latitude with which student responses are judged.

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TUTOR/COMPUTER MARKING OF
A KELLER PLAN COURSE

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A Keller Plan course for the teaching of Inorganic Chemistry to second year Applied Chemistry degree students has been in operation at Trent Polytechnic since 1976.

Although content has changed slightly as curriculum developments have occurred, the essential features of the teaching method have remained the same. Students work at their own pace from a procedure which enables them to satisfy a set of objectives. When confident of mastery of the material students present themselves for a test. Success, i.e. a score of better than 70%, means that the next unit is issued, whereas failure means that more work must be done before another test is taken. Two test periods were timetables each week for the one term that the course lasted. Three alternative tests were available for each of the five units, and consisted of five short answer questions. Tests were distributed and marked in the timetabled period, although frequently long queues developed and extra time was needed. Two tutors were required for the normal group size of 50.

The five units were made up of two audio tapes with accompanying booklets, a work book, and two units in which reference was made to text books (one book a first year text, another an advanced text).

Beard and Hartley (1984) have reviewed the different approaches to learning without teachers.

From responses to our own questionnaires which have been used since 1976, the majority of students want the immediate feedback from the marking of tests during the timetabled hours. However the pressure on staff time resulting from increased staff:student ratios threatened this aspect of the teaching method.

Consequently the DEC-20 Computer was used for partial marking of each unit. A bank of 5 alternatives for each of 10 multiple-choice questions was set up for each of the 5 units. (A total of 250 questions.)

Students log in and access the KP program. They are told they have 15 minutes to complete the 10 questions and must score at least 7 out of 10. Questions appear on the VDU one at a time and the student is told if he has responded correctly or not. If 4 incorrect responses are recorded then the student cannot proceed further and must log out. A record of this failure is kept for 24 hours to prevent him taking the test again before some further work has been done. Similarly if he spends more than 15 minutes on the test he is again asked to log out. No permanent record of their failure is kept.

On scoring 7/10 or better the student has printed out the multiple choice questions he got wrong, and a long answer question, again selected randomly from a bank. Instructions on this printout direct him to hand his long answer to the tutor with a guarantee that it will be marked within 24 hours. A satisfactory answer enables the student to proceed with the next unit.

One member of staff has coped with the tutor marking which is spread evenly over the week. The computer has removed some of the routine marking but face-to-face contact has been maintained at each unit to enable tutors to provide brief tutorials to remedy any perceived student problems.

Student responses for the one year in which computer marking has been used show the same pattern as for previous years although about half the students improved their knowledge of the main frame computer. Our surveys show students appreciate the format of the material (introduction, objectives, SAQs, etc.); a majority find the course enjoyable although only a minority want more such courses. Students find it a disadvantage not to have a 'good set of notes' and despite having demonstrated their ability to pass tests and write essays acceptable to their tutors, about 2/3 express a lack of confidence in their knowledge after completing a unit.

Students lack of confidence and reliance on a limited learning strategy are wider issues to be tackled, if graduates useful to industry are to be produced.

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TEACHING AND LEARNING PROBLEM SOLVING IN SCIENCE WITH COMPUTER AIDED INSTRUCTION

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Learning to work with science is difficult

Anyone teaching science is familiar with the difficulties students have in solving problems by using the concepts, laws and formulas of subject matter in chemistry, physics and technology. Students usually work a number of problems in assigned exercises, but as a rule many students do not know how to start. They wait for the teacher to give a hint or the complete solution or use a trial and error method and hope that this will build up sufficient routine to enable to pass the exam by sheer recognition of a familiar set of problems (Mettes et al, 1982; Van Weeren et al, 1982; Kramers-Pals et al, 1983; Larking, 1980; Greeno, 1980).

The authors find this approach to learning problem solving undesirable because after the course the students are not able to approach new problems in a systematic way. Therefore we have for several years specifically focused our attention on developing a systematic approach to solving problems and on designing instruction where students learn this problem solving. Although our activities cover other subject fields like political and business administration and communication, we concentrate in this paper on science.

A System of Heuristics for Problem Solving

Teachers regularly give students directions regarding the way they should do the problems: e.g., read the problem carefully, check the answer. We will call this type of directions heuristics. Heuristics increase the chances of finding the solution to the problem but give no guarantee of reaching that solution. We found that offering a few heuristics here and there is not sufficient; the heuristics offered should form an integrated *system of heuristics*. Figure 1 contains a survey of such a system of heuristics for a course in thermodynamics, where the learning results showed indeed important improvements (Mettes et al, 1981). This survey (chart) is usually referred to as SAP, a Systematic Approach to Problem Solving.

Key Relations

As indicated in phase 4-6 of SAP (Figure 1), the core of the problem solving process is linking up unknown and data using relationships between quantities. These relationships in science and technology usually result from laws, formulas, definitions etc. Such quantitative relationships are referred to as "relations." An important part of all instruction in science is the derivation and explanation of these relations. In order to be able to solve problems, the student must have sets of these relations in his memory in such a way that he can select those relations that are appropriate in a specific problem situation. Not all relations that are derived are equally relevant or important. Usually a student is confronted with a great amount of formulas, laws and definitions in one course. In order to avoid an overload of the memory capacity students should learn to make a selection of those relations that are particularly necessary as starting points in the problem solving process. We call these relations: *Key Relations*. Key relations are formulated in a way to insure their usefulness in the transformation of most problems and their number is kept as small as possible.

The Key Relations for a specific subject and the conditions for their applicability are structured in clear and easily accessible overviews, the

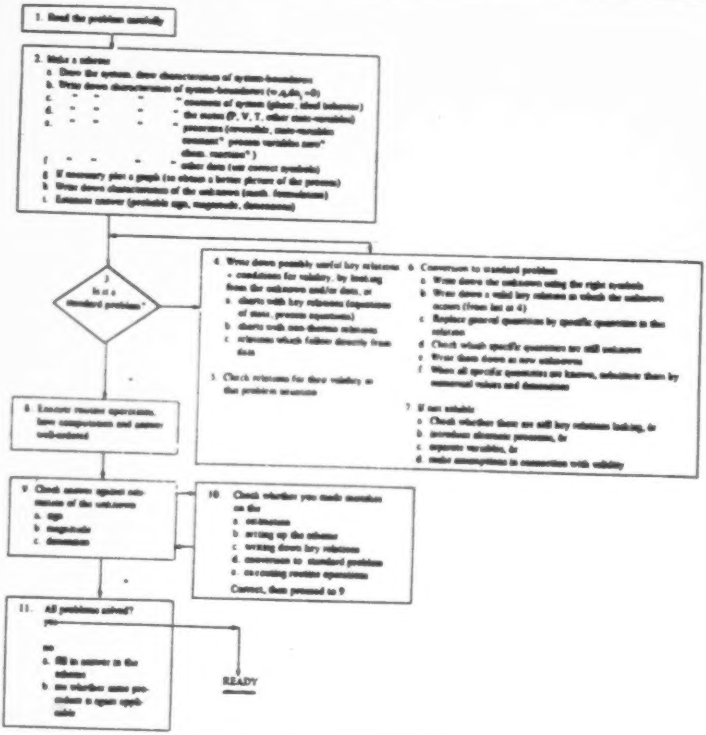
1. Read the problem carefully
2. Make a scheme
a. Draw the system, draw characteristics of system-boundaries
b. Write down characteristics of system-boundaries (= Q,dm, =0)
c. " " " " contents of system (phase, ideal behaviour)
d. " " " " the states (P, V, T, other state-variables)
e. " " " " process (reversible, state-variables constant* process variables zero* dism. reactions*)
f " " " " other data (use correct symbols)
g If necessary plot a graph (to obtain a better picture of the process)
h Write down characteristics of the unknown (math. formulation)
i. Estimate answer (probable sign, magnitude, dimensions)
3 Is it a standard problem?
4. Write down possibly useful key relations + conditions for validity, by looking from the unknown and/or data, at
a. charts with key relations (equations of state, process equations)
b charts with non-thermo relations
c relations which follow directly from data
5. Check relations for their validity in this problem situation
6. Conversion to standard problem
a Write down the unknown using the right symbols
b Write down a valid key relation in which the unknown occurs (from list at 4)
c Replace general quantities by specific quantities in the relation
d Check which specific quantities are still unknown
e Write them down as new unknowns
f When all specific quantities are known, substitute them by numerical values and dimensions
7 If not soluble
a Check whether there are still key relations lacking, &
b introduce alternate processes, &
c separate variables, &
d make assumptions in connection with validity
8. Execute routine operations, have computations and answer well-ordered
9 Check answer against estimate of the unknown
a. sign
b magnitude
c. dimension
10. Check whether you made mistakes on the
a. estimation
b setting up the scheme
c writing down key relations
d. conversion to standard problem
e. executing routine operations
Correct, then proceed to 9
11. All problems solved?
yes
no
a. fill in answer in the scheme
b. see whether same procedure is again applicable
READY

Figure 1. Scheme of the Method of Systematic Approach to Problem Solving (SAP-chart)

so-called Key Relations (KR) charts. By the continuous use of these charts in exercising and feedback it is easier for the students to memorize the relations and recall them as he needs them in solving problem situations.

In organizing feedback to students who make mistakes, SAP and KR-charts proved to be very helpful, equally in the classroom situation as in CAI-courses.

Instructional design

The instructional actions that are needed to stimulate and guide student learning can be realized in several ways. We call these fundamental actions of the instructional system "instruction functions" (Mettes et al, 1981). For training in problem solving the most important functions are: practicing students and giving them feedback in handling problem solving. In order to optimalize the realization of these functions, we designed sessions of small groups of about 20 students with one teacher. The teacher's task in these problem solving sessions was to provide problems and if necessary some additional explanation of subject matter but mainly to supervise the students exercising. He has to diagnose the mistakes students make while exercising (mostly individually), and giving them feedback in order to repair the causes behind these mistakes: the deficiences in the students knowledge base.

Although the results of the students in these courses were definitively better in a number of courses on different subjects (Mettes et al, 1981; Van Weeren et al, 1982), we also encountered some difficulties in this instructional design, that are hard to solve

Another difficulty is keeping record of the different learning histories of all students during the course. This information is to much for the memory of the teacher. The realization of this instructional design also asks for training of the teacher in giving feedback while using the system of heuristics and the KR-charts, in diagnosing the mistakes and in deciding on measures. Some special system of teacher heuristics for improving the quality of this feedback (precision, timing, effective use of the students learning history etc., and the efficiency of teacher time was developed (Mettes and Roossink, 1983).

A possible solution: Computer Aided Instruction

Since we have TAIGA available on microcomputer in our university as the Authoring System for CAI (Laagland, 1984), we are able to make complex CAI in less time and with greater ease than before. This makes it possible to use CAI also for exercises and feedback in teaching problem solving in science. Using the system of heuristics we can support the problem solving steps the students want to take and give adequately feedback to each step. The most important phases in the problem solving processes realize successive transformation of the science problems. These transformations are concentrated in the analysis of the problem (supported with special heuristics for this anlysis) and in the use of the Key Relations we mentioned earlier (by selecting transformations using the unknown as point of departure, (by specifying each general quantity and substituting these quantities by values and units; see figure 1).

Using the system of heuristics the CAI program is able to supervise the way a student realizes these essential problem solving actions and gives feedback when mistakes are made. Because of the problem solving character of these exercises it is also possible to support partially some dead-end routes until the student can see that he is working in the wrong direction. In addition, the system of heuristics gives the coursemaker the rationale to select between all possible routes that the students otherwise should try and make the feedback very specific for each mistake they make.

An example of CAI in Dynamics

For problem solving in Dynamics we developed a CAI course with emphasis on the anlysis of the problems to exercise. For that purpose we made an inventory of the points of analysis which are specific for the field of Dynamics. The result of this inventory was a list of thirteen specific points of anlysis. On each of these points we constructed exercising problems. In the framework of TAIGA each problem has been programmed and provided with feedback on the possible actions of the students in their interaction with the CAI program. We have chosen for a "delay" in the feedback so that the student is allowed to follow routes which are wrong or less suited to the problem. In such a way a student has the opportunity to "repair" things he has done. One of the good ways to learn is to make errors and to discover them. We have programmed twenty exercise problems. In a tryout with five students during a session of three hours, the CAI program turned out to be very valuable according the the opinion of the students.

Results

We have made other prototypes of a number of such CAI courses in different areas of science teaching, as can be seen in the demonstrations at the conference:

- Chemical calculations;
- Geometry;
- Electricity.

- Thermodynamics.

The tryouts of these courses with small groups of students at TUT and other Dutch institutions of Higher Education have been successful. These CAI courses generated the same learning processes as we saw in the small group session before. Students work very consciously in learning problem solving in these subjects. They work and learn in a way that gives us confidence in the learning results and efficiency of the large scale experiments we are now planning

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A COMPUTER ASSISTED INSTRUCTION EXPERIMENT IN THE UNDERGRADUATE CHEMISTRY EDUCATION

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At the beginning of the academic year '79-'80, it was decided to start an experiment in Computer Managed Instruction in the undergraduate education at the Limburgs Universitair Centrum (L.U.C.) in Belgium.
The article infra gives a review on motives that have led to this decision. Also a brief overview of hard- en software is given. The results are compared to classical education and a student evaluation is outlined.

Already some years before the start of this experiment we noticed that the relatively low scores in a particular course on inorganic chemistry were most probably due to a lack of ready knowledge and skills of trivial names and the writing of chemical formulas. However, since this lack was not common to all students in the same degree, we started looking for a way to give courses in a more individualized form.
At about the same time, we got the opportunity to use some terminals on the PLATO learning sytem. To test the efficiency and the usefulness of such a dedicated system, we decided to extract some material, mostly in the area of drill and practice, from the same inorganic chemistry course and offer it to the students under the form of an individualized Computer Managed Instruction package. We also included a part on remedial teaching of trivial names and the writing of chemical formulas.
The PLATO system, in the way we used it, consists of a mainframe, on to which several hundreds of individual terminals can be attached through a

network. All terminals have, at the same time, access to the same central PLATO software. This software consists of several thousands of Computer Assisted Instruction (CAI) lessons covering subjects in Science, Languages, Management, Industry and so on. In addition to this, a Computer Managed Instruction framework is offered. This software allows a teacher to build up his own course using the provided CAI lessons, in conjunction with his off-line (i.e. not directly controlled by the computer) media such as slides, video texts and so on. Finally the teacher adds his own test questions to measure the students progression.

The computer manages the way the student takes to proceed through the course. This means that the computer, based on test results, assigns individualized "learning resources" (text, slides, video, CAI-lesson) for every student. After completion of these learning resources a new test is offered. This procedure is repeated until mastery is achieved.

In addition to all this a great number of statistics is kept, e.g. test results, test durations, time spent at the terminal and a detailed item analysis.

In the first table we show the study results in Inorganic Chemistry over the last 8 years.

		mastered/total	%	avg.scores/20	% (avg.)	scores (avg.)
	'77-'78	11/20	55	9.9	56	9.85
	'78-'79	12/21	57	9.8		
PLATO	'79-'80	19/26	73	11.5	63.2	10.94
	'80-'81	8/17	47	8.9		
	'81-'82	11/19	58	10.1		
	'82-'83	16/22	73	12.1		
	'83-'84	23/35	65	12.1		

As can be seen from this table, the results have considerably improved after introducing the CMI package.

On the other hand, there is no correlation at all between the results in the computer tests and the final scores on the exam. This is easily explained, since the computer score didn't take into account the number of tests that were taken to achieve this result : it is enough to succeed once in the test to get the maximum score. The only remaining factor that can give relevant data on the intrinsic quality of the computer tests seems to be the number of tests taken : since test results are only logged until mastery, a great number of tests also means a great number of failed tests. And indeed there was a strong correlation between the number of tests and the final scores on the exam : students with less (but better) tests score higher on the exam.

Another correlation was found between the total time spent at the terminal and the final results. Indeed, if we split up the total student population into two groups, the first group having spent less than 20 hours at the computer, the second more than 20 hours, we find the following results :

Hours spent on PLATO	Mastered exam	Not Mastered exam	Absent
≤ 20 h	21 %	71 %	8 %
> 20 h	86 %	-	14 %

This leads us to the conclusion that it seems to be not enough to master the computer tests but also to have spent a certain amount of time taking the CAI lessons. On the other hand, it is also likely that this second group of students also in general spends more time studying and therefore achieves better results.

At the end of each year, an enquête was held. The questions covered three areas : hardware, software, CMI-efficiency.

Hardware :

The most important problem here, especially in the first years, was the availability of the terminal(s). This was solved by increasing the number of terminals to 5 for about 25 to 30 students.

Software :

In general, the self-programmed lessons were judged better than those taken from the Plato library. The obvious reason for this is, that the former lessons were explicitly programmed to fit in the course. Very striking in this context is that students keep asking for written texts. In our opinion, however, such texts should be restricted to general topics, tables, data and so on, but should never provide a full copy of the lesson.

The main complaint as to the software remains that, even with a sophisticated system as PLATO, it is not always possible to provide enough feedback for all thinkable answers students can give. This restricts the use of computers in the education to well defined, small subjects.

Efficiency :

- About 55-60% of the students preferes a classical exercise session over the PLATO lessons. Main reason is the possibility of asking questions and getting better feedback on wrong answers. In favour of PLATO is : work at own pace, allows better concentration, as much exercises as one wishes.
- Best areas for computer education are exercizing and testing while introducing new material can better be done by other means.
- Nobody likes the situation in which all courses would be given by a computer.

General conclusion.

We think that we have been succesfull in our both goals of this experiment. On one hand we succeeded in raising the overall scores on the Inorganic Chemistry exam. This is mostly due to a better training in trivial names and the writing of chemical formulas.

On the other hand we had the opportunity to study a sophisticated system like PLATO, and learn more about Computer Aided and Computer Managed Instruction.

BURNOUT, STRESS AND RENEWAL OF ACADEMIC STAFF

WEDNESDAY, 3 JULY

1030 - 1200

LEADERSHIP FATIGUE: A CHALLENGE TO SOCIAL WORK DEANS AND DIRECTORS

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Frank J. Spicuzza
Marianne Woodside
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At present, the profession of social work is operating under considerable pressures due to diminishing resources and threats to its autonomy. This is reflected in the government's interest in stretching the service dollar, deregulation of standards requiring social workers, and limited job opportunities with less than competitive salaries (NASW News, April, 1983). Arthur Katz (1983) in a recent editorial written for Social Work Education Reporter emphasizes that "It's never been tougher to interest good people in joining our profession than it is now." As the profession struggles to cope with these pressures of curtailment, it is inevitable that those responsible for leadership of social work education programs manifest signs of strain. Manifestations of such strain are emotional exhaustion and depersonalization, two components of leadership fatigue.

This fatigue or burnout, a phenomenon of physical and psychological fatigue resulting from occupational distress (Fruedenberger, 1975), has been discussed and analyzed in a multitude of settings involving direct or front-line social work practice with various client groups (Bramhall and Ezell, 1981; Daley, 1979; Harrison, 1980; Karger, 1981). Regardless of the setting, dedicated social workers with high expectations confront daily vast demands and limited resources which lead to feelings of hopelessness that exhaust body and morale. Similar feelings are present in administration as well (Dempsey, 1981; Sarri, 1982).

Graduate deans and undergraduate program directors confront stressors that are standard to social work practice and encounter realities which require the balancing and juggling of professional and academic demands. Fifty-two different universities and colleges announced vacancies for these positions during the last three years, and The Chronicle of Higher Education has reported a 43 percent job turnover of deans or directors of social work programs. These may be indicators of the several pressures facing social work administrators in higher education. Otis and Caragonne (1979) in examining factors pertinent to resignation identify sources of pressure as being budgeting, role confusion, and the lack of initiating development that leads to professional satisfaction. Today, factors such as seriously declining enrollment patterns (Carbino and Morgenbesser, 1982), allegedly limited employment opportunities for faculty and graduating students, and dimished financial support (Born, 1982) provide additional stress which may erode their leadership ability. Almost a decade ago, Phillip Fellin (1974) noted that limited resources translate in practical terms to reduced efficiency and effectiveness. The ripple effect on student and faculty motivation and the ability of graduates to achieve the program's outcomes become a concern.

DATA COLLECTION AND ANALYSIS

The purpose of this research was to answer the question, "What is the nature and extent of the emotional exhaustion and depersonalization among graduate deans and baccalaureate program directors?" A random sample of 218 deans and directors of accredited master and baccalaureate social work programs were surveyed. The Maslach Burnout Inventory (MBI) which consists of 22 worker-validated statements was used to identify the following areas; emotional exhaustion, depersonalization, and personal accomplishment. The MBI items were presented in the Hassles Scale format and each of these subscales were rated according to frequency and intensity. High mean scores from 5 to 6 on the emotional exhaustion and depersonalization subscales and a low mean score from 1 to 2 on the personal accomplishment subscale are indicators of leadership fatigue or burnout (Maslach and Jackson, 1981).

Returns were received from 135 (62%) deans and directors. There were 16 deans, 90 baccalaureate program directors, and 18 individuals with equal graduate and undergraduate responsibilities. Eleven respondents did not identify their position. Males accounted for 58 percent (n=72) and females 42 percent (n=52) of the sample. The age of the respondents ranged from 31 to 67 years with a mean age of 42. Most of the respondents were caucasian (76%), married (76%), and described themselves as being moderately to very religious. Half of the respondents had a doctoral degree and 89 percent reported they worked over 40 hours per week. Table 1 presents the mean scores for the subscales of the MBI according to the work role of the respondent. A review of the overall mean scores for each of the subscales, according to the dimensions of frequency and intensity, indicates an absence of leadership fatigue for the social work administrators in higher education who responded to the survey. This also held true for the variables of number of years on the job in this position, years at this institution, and type of institution.

In order to visualize the absence of leadership fatigue, the items on the Maslach Burnout Inventory are listed according to its related subscales in Table 2. The mean scores for each of the MBI subscales, as reported by the three categories of respondents, are presented according to the scale statements on the survey instrument in Table 3. This table suggests that burnout does not exist in the sample surveyed. Given the low mean scores for emotional exhaustion and depersonalization and the high score for personal accomplishment, several reasons may contribute to the absence of emotional exhaustion and depersonalization among deans and directors. These include the support systems available for deans and directors,the stimulation and challenge of the job itself, validity of the data gathering instrument, as well as the need to consider how denial may skew the findings.

By nature of the position, deans and directors may have adequate support through local and professional relationships. Locally, support may be provided through interaction with community agency executives, membership on agency boards, and consultation activities. Professionally, association with other deans and directors at conferences, as well as collaboration on projects contribute to a sense of networking. Recent empirical research indicates those who are most vulnerable to stress lack an adequate support system (Albrecht, Irey, and Mundy, 1982).

In spite of the reduced funding, dwindling programs, scrupulous accountability procedures, Jayaratne and Chess (1983) indicate that social work administrators appear reasonably satisfied with their jobs. The degree of difficulty associated with the positions due to the presented intellectual and personal challenges may attribute to this feeling of job satisfaction. If deans and directors perceive the personal challenges and opportunities by their position as paramount, this may have some bearing on their responses to the MBI.

One may question the validity of the data gathering instrument as it relates to the sample. The MBI was developed to determine the nature and extent of burnout among direct service providers, such as police, public welfare workers, nurses, and mental health workers. Measures to determine the validity and reliability of the MBI were gathered from the responses of such frontline workers. The sample in this study consisted of deans and directors who were involved in indirect practice and who may not have been able to adequately address questions geared for direct practice. This contributes to what may appear to some to be denial. Further research is in order to both address the validity of the MBI for higher education and to determine if it is necessary to develop an instrument that is appropriate for educators in social work administration. The outcome of this effort will increase the certainty of the data in future investigations on leadership in social work education.

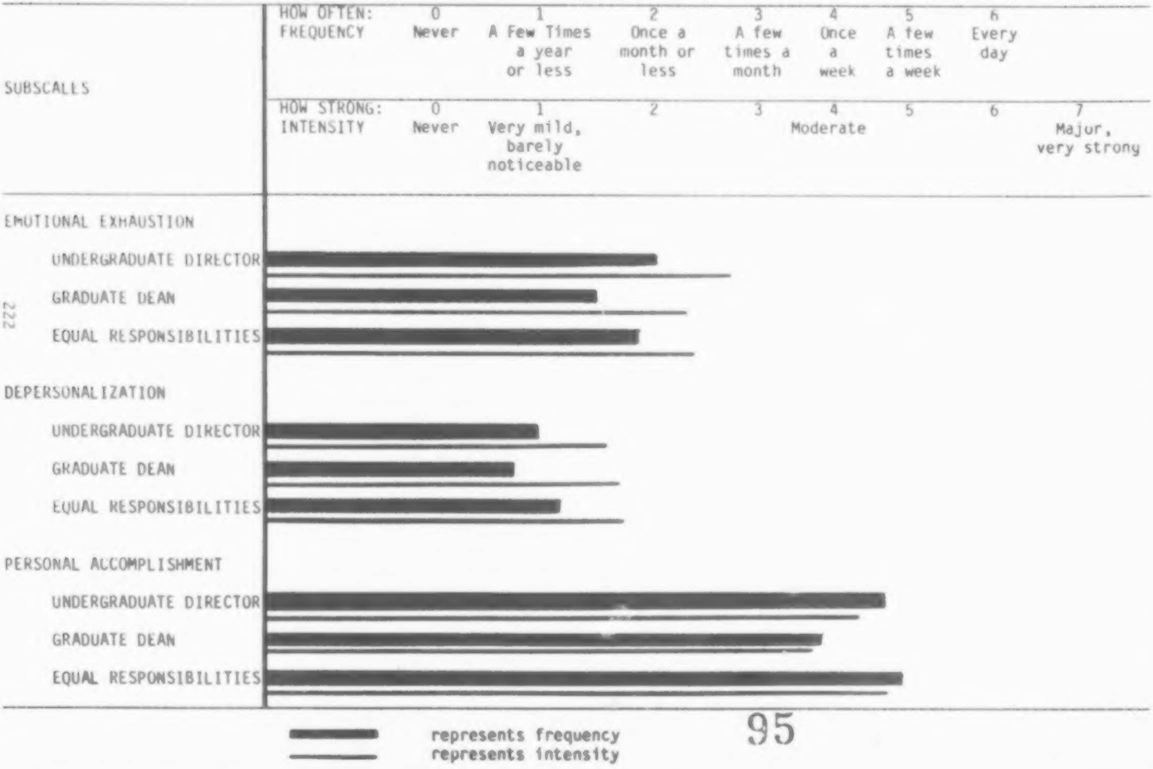
TABLE 1: Mean Scores for Subscales According to Work Role of the Respondent

		FREQUENCY						INTENSITY					
		EMOTIONAL EXHAUSTION		DEPERSONAL-IZATION		PERSONAL ACCOMPLISHMENT		EMOTIONAL EXHAUSTION		DEPERSONAL-IZATION		PERSONAL ACCOMPLISHMENT	
Sample	N	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Undergraduate Director	(90)	2.0	1.0	.96	.98	4.5	1.3	2.8	1.3	1.5	1.4	4.3	1.2
Graduate Deans	(16)	1.4	1.0	.85	.96	4.0	1.6	2.1	1.5	1.6	1.7	3.9	1.5
Equal Responsi-bilities	(18)	1.8	1.2	1.1	.82	4.8	.97	2.3	1.4	1.7	1.3	4.5	2.4

TABLE 2: Items On The MBI According To Subscales

Subscale	Statements Relating to Subscale
Emotional Exhaustion	I feel emotionally drained from my work. I feel used up at the end of the workday. I feel fatigued when I get up in the morning and have to face another day on the job. Working with people all day is really a strain on me. I feel burned out from my work. I feel frustrated by my job. I feel I'm working too hard on my job. Working with people directly puts too much stress on me. I feel like I'm at the end of my rope.
Depersonalization	I feel I treat some recipients as if they were impersonal objects. I've become more callous toward people since I took this job. I worry that this job is hardening me emotionally. I don't really care what happens to some recipients. I feel recipients blame me for some of their problems.
Personal Worth	I can easily understand how recipients feel about things. I deal very effectively with the problems of my people. I feel I'm positively influencing other people's lives through my work. I feel very energetic. I can easily create a relaxed atmosphere with my recipients. I feel exhilarated after working closely with people. I have accomplished many worthwhile things in this job. In my work, I deal with emotional problems very calmly.

TABLE 3: Mean Scores For the MBI Subscales Presented According to the Respondents Reactions to Statements of Frequency and Intensity



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STRESS AND THE FACULTY MEMBER:
THE GENDER DIFFERENCE

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Introduction

At the 1984 Improving University Teaching Conference in Washington, D.C. an invited address, "Pressures of the Professoriate: Individual and Institutional Coping Strategies" (Gmelch, 1984) disclosed the preliminary findings of the National Faculty Stress Research Project. The Project was undertaken to (1) identify job situations perceived by faculty as most stressful; (2) group these stressful job situations into interpretable factors; (3) search for significant relationships between perceived stress and personal and professional factors such as academic discipline, rank, tenure, and age; and (4) identify strategies for faculty to cope with stress (Gmelch, Lovrich, & Wilke, 1984). Since this time, other studies have replicated the methodology using the Faculty Stress Index in a number of European and Middle Eastern countries (Perlberg, 1984). None of the previous studies, however, have explored the possible differences in the perceptions of stress between men and women faculty members.

It is not the intent of this paper to recapitulate all the findings of our research nor the comparisons with other studies, but to extrapolate, from the original data of over 1200 faculty members at 80 institutions of higher education, the differences between male and female perceptions of the stress they experience. A brief review of the literature, summary of the methodology, and findings follow.

Background

Women have been entering the previously male-dominated world of higher education in increasing numbers during the past several decades. While they meet many of the same challenges, pressures, and demands that their male colleagues face, faculty women often experience unique obstacles and stressors due to their gender and socialization experiences (Perry, 1983; Broschart, 1978; Ferber & Loeb, 1973).

Gender socialization patterns for males and females differ in important areas of professional career preparation. Females are raised to be more dependent on others, especially adult authority figures, for a sense of their self-esteem and self-worth (Fox & Hesse-Biber, 1984; Bardwick & Douvan, 1972). Because early on girls are not encouraged to develop an objective sense of self-worth, many remain overly sensitized to the responses of others to guide their perceived successes or failures. Males, on the other hand, are pressured from an early age to turn to peers for acceptance, and also to develop an internal sense of objectivity in evaluating their accomplishments and self-worth (Bardwick, 1972).

In the world of work, both males and females tend to value much more highly the traditional masculine personality traits, i.e., objectivity, aggressiveness, achievement, courage, professional committment, ambition and drive, verses the traditional feminine traits, i.e., subjectivity, compliance, nurturance, succorance, emotionality, and loyalty (Bardwick, 1972). Both male and female professionals have tended to devalue the women's roles and personal qualities. "When male criteria are the norms against which female performance, qualities or goals are measured, then women are not equal. Since the sexes are different, women are defined as not-men and that means not good, inferior" (Bardwick, p. 55).

As a result, females through their gender socializationing frequently underestimate their abilities and performance while exaggerating their perceived liabilities. They tend to attribute their successes to unstable and external forces over which they have no control, and conversely their failures to some deficit within themselves (Fox, 1984).

Horner (1972) found that women experience a unique form of success motivation--the motivation to avoid success. She argues that this exists primarily because the anticipation of success in competitive achievement-oriented activities, especially against men, often creates a fear of negative responses, i.e., perceived loss of femininity and threat of personal or social rejection. Thus women may hold back from direct competition with their peers, especially male collegues.

It appears that females have to overcome both personal and social gender conscriptions to find their place within professional careers. Because traditional sex roles also call for women to place primary focus on maintaining their homes, marriages and families, this increases their inter and intrarole conflict. Fox (1984) stated "At the cultural root of women's socialization is a basic conflict between the definitions, expectations and demands of 1) their gender and family roles, and 2) their occupational and extrafamial roles" (p. 65). These conflicts appear especially true for women in faculty positions.

As a final note, Haw (1982) found that for every study on work-related stress and women in the past decade, there have been approximately six studies on men. We hope the following analysis will add to the integration and understanding of men and women as they attempt together to transform the pressures of the professoriate into higher levels of productivity.

Methodology

From among 184 doctoral granting universities in the United States, a sample of 40 public and private universities was randomly selected. From these institutions, a sample of 1,920 individuals was selected consisting of an equal number of faculty at public and private universities; equal proportions of assistant, associate, and full professors; and equal proportions of faculty from each of the eight disciplinary clusters.

The 45-item Faculty Stress Index used in the study was developed through a series of iterations and field tests to measure the sources of faculty stress. A response rate of 75% was achieved which included 240 women and 970 men faculty members.

Findings

The findings are reported in three separate tables. These tables set forth comparisons between male and female professors on levels of stress from their job and life, areas of academic responsibility, and factors of faculty stress.

Table 1 displays the results from three questions pertaining to the levels and percentages of perceived stress from their job and life. Women perceived a significantly greater level of stress from their job (.001 level of significance) and from their daily life (.01 level of significance). In response to the question "What percent of the total stress in your life results from being a faculty member?", male faculty members indicated approximately 58% while female faculty members responded with almost 64%, .01 level of significance.

In taking a somewhat more focused perspective, it was possible to look at a number of items which fell into the faculty responsibility areas of teaching, research, and service. Since rewards are distributed

Table 1

Comparison of Male and Female Faculty
Levels of Stress from Job and Life

Variable	Stress from Job	Stress in Daily Life	Percent Stress in Life From Job
Male Faculty	2.88	2.41	58.46
Female Faculty	3.26	2.67	63.55
T-Value	-4.30***	-3.02**	-2.94**

** p .01
*** p .001

Table 2

Comparison of Male and Female Faculty
by Areas of Responsibility

Variable	Teaching	Research	Service
Male Faculty	19.38	16.88	15.66
Female Faculty	20.06	17.97	17.09
T-Value	-1.14	-2.42*	-2.63**

* p .05
** p .01

resources are allocated along these dimensions, important differences may be found between men and women faculty. Table 2, using a simple difference of means test, indicates that men and women do not experience significantly different levels of stress from teaching, but do from their research and service functions (at the .05 and .01 level of significance, respectively).

Finally, to explore the unique differences of their professional role which may not be captured by investigating their traditional responsibilities of teaching, research, and service, a principal component, varimax solution factor analysis was used to single out the unique faculty dimensions from the 45-item Faculty Stress Index (Gmelch, Wilke, & Lovrich, 1984). The results of the factor analysis indicated the presence of five distinct factors which, in combination, accounted for 86% of the common variance and included 31 stress items with loadings of .40 and above.

(1) *Reward and recognition* addressed the area of faculty rewards and recognition. All eight items dealt with *inadequate* rewards, *insufficient* recognition, and *unclear* expectations in all three areas of faculty responsibility: teaching, research, and service.

(2) *Time constraints* reflected time constraints which confront faculty members--insufficient time to keep abreast of current developments, inadequate time for class preparation, interruptions from telephones and drop-in visitors, writing memos and letters, attending meetings, too heavy a work load, and job demands interfering with personal activities. It is interesting to note that none of these stressors related directly to teaching, research, or service, but represented the means, not the ends, for faculty productivity.

(3) Departmental influence dealt with attempts to influence the chair's decisions, resolving differences with the chair, understanding how the chair evaluates faculty performance, and the overall lack of impact on departmental and institutional decision-making.

(4) Based on the assumption that faculty reputation is built on publications, presentations to conferences, grants, research, and the like, the emergence of the professional identify factor is not surprising. Add to this factor the item "imposing excessively high self-expectations" (the most significant stressor for all faculty) and this factor could represent foundation of faculty stress.

(5) Student interaction related to the interaction between students and faculty. They found themselves in conflict over evaluation, advising, and teaching.

With respect to the gender differences among the prevous five factors, Table 3 displays that women faculty are significantly more stressed by time constraints and professional identity, and not the other factors.

Table 3

Comparison of Male and Female Faculty
by Factors of Faculty Stress

Variable	Reward and Recognition	Time Constraints	Departmental Influence	Professional Identity	Student Interaction
Male Faculty	11.05	14.00	5.85	6.52	5.69
Female Faculty	11.60	15.48	5.99	6.91	5.82
T-Value	-1.17	-4.37***	-0.52	-2.65**	-0.83

**p .01
***p .001

Discussion

The findings that women experience more stress from their job and life than men faculty members alone provides significant findings. Also the result that research and service, not teaching, are more stressful areas of responsibility for women than men faculty suggest additional conclusions worthy of discussion.

Probably the most fruitful area for interpretation centers around the differences in the factors of faculty stress. It is not surprising that women experience more stress from time constraint items such as paper work, meetings, telephone and visitor interruptions, as well as "having job demands which interfere with other personal activities" (i.e., family, recreation); and "having insufficient time to keep abreast with current developments in my field."

Many married women, especially those with children, are holding down the equivalent of two full-time jobs. Yogev (1981) conducted a survey of 106 faculty women at Northwestern University and found that married women without children estimated that they spent 18.4 hours per week on housework while their husbands spent 6.3 hours. Married women with children estimated they spent approximately 60 hours per week on domestic chores and child care while they felt their husbands spent approximately 20 hours per week on these tasks. As a result, husbands were also able to spend approximately 10 more hours a week devoted to their careers than their wives.

The majority (60%) of these women did not feel the work load was unfair, nor did they expect their husbands to do more. One respondent said, "My husband does much more than most husbands, but the work is still not equally shared - it is mostly mine. I am not sure I want it to be equal. I want to be with the children these unequal hours, otherwise how shall I be able to feel that I am the Mother of the family?" (p. 898).

Evidence also supports the fact that women experience greater stress and feelings of time constraints when they combine the dual roles of marriage and career. Koester and Clark (1980) found that for women, the greatest stress and least job satisfactions were associated with combining a professional role with marriage. For men, the greatest stress came with not being married. Among the 700 faculty interviewed only 8% of the males were not married while over 50% of the female faculty were not. Marriage was seen as a professional asset for men while the reverse was true for the women.

Arfken (1983) found that women in dual-profession marriages often experience conflict within their marriages in the following areas: pressures of time, lack of equity, career imbalance, cost of achievement, and strain of stated and unstated role expectations from self and others. The most frequently listed costs of juggling multiple role responsibilities include: guilt, lack of achievement, and exhaustion.

As has been shown, marriage and families are much more time-consuming for women than men (Yogev, 1981; Haw, 1982). Women were also found to have more interrupted labor force participation than men (Broschart, 1978). This was often due to timeout taken to have children, and job changes primarily because of husband's relocation. Women also experience more time constraints within their careers if, after they've interrupted their career progress, they find themselves playing "catch up" to their male collegues. These women must read more, work harder, complete more research, and publish greater amounts to try to make up in their fields for lost time. Many do this while providing almost full-time care for their families.

The factor "professional identity" was also found to produce significantly more perceived stress for women than men, especially for married women. This area included preparing manuscripts for publication, securing financial support for research, and making presentations at professional conferences. One reason female faculty often feel more stress in these areas might be because they are frequently excluded by their male-collegues from participating in the "old boy" networking within their departments, which allows for greater activity in research and publishing. Male faculty often enter the world of research and publishing through a mentor relationship with a well-published senior faculty member. Women are rarely awarded this opportunity nor do they often receive the benefit of having a strong female role model in their department to pattern themselves after.

One other stress item in the professional identity factor was "imposing excessively high expectations." From the preceding discussion on gender role socialization patterns and time constraint issues, it can readily be seen why women perceive more stress in this area. Women generally have not been socialized from their childhood to expect a high-powered career where they compete for money, success, and respect with men. Males have not been socialized to expect to compete directly nor work closely on a peer level with females. When women do break out of their prescribed gender roles and work into academic positions which require competitive self-promotion, many women have to struggle against their internal conditioning which tells them it's unfeminine to compete, especially against males, and that the personal costs may be too high (Bardwick, 1972).

Because many women lack an objective sense of self-worth and achievement, it may be more difficult for them to perceive they have something important to offer academe in the way of innovative research or publishable material. Consequently, it is possible they perceive more stress when they venture into an area that appears more threatening or beyond their perceived personal reach. Many women counteract the negative self-doubts and fears by trying even harder and having "excessively high expectations" for themselves.

Conclusion

While today all institutions of higher education represent employers of equal opportunity without regard to race, religion, creed, gender . . . one class of faculty does seem to receive its unequal share of occupational and personal stress. Women, as members of the academic community, report significantly more stress from their profession and life than men. Specifically, while the stress of teaching is shared equally, the factors which mostly contribute to this unequity in stress center on the time constraints experienced by women faculty, and attempting to build a professional identity through research, publications, grants and professional presentations, the responsibilities of research and public service carry a heavier burden for women than men.

The previous section forwarded plausible explanations for both of these conclusions. Several actions can be taken to help ameliorate the inequitable pressure felt by women faculty.

(1) Encourage women faculty to actively seek mentors in their growth toward professional identity and excellence.

(2) Acknowledge, encourage, and educate women to utilize "networks" to improve their position and professional image.

(3) Reduce the requirements for overload and extra-hour involvement in campus activities.

(4) Assist faculty to develop effective self-management techniques to maximize their time.

It is our intent that the study and set of suggested actions foster greater understanding concerning the unique pressures women faculty experience and how all faculty, men and women alike, can work together to transform negative professional pressures into positive responses to raise the levels of personal and professional productivity.

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THE DEVELOPMENT OF AN INSTITUTIONAL MODEL FOR FACILITATING FACULTY RENEWAL

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The University of Georgia

Faculty stress and burnout have become major issues in higher education. Recent studies of the professoriate in the United States have found that morale has declined among the faculty in almost all types of institutions and careers in academe are becoming increasingly less attractive (Schuester, et al., 1984). Alcohol abuse has become a serious faculty problem on many of our campuses (Thoreson, 1984) and economic and demographic factors have combined to produce relatively immobile, "graying" faculties in need of opportunities for both personal and professional renewal (Lovett, 1984; Jackson & Simpson, 1984).

The growing concern for faculty burnout and its impact on university teaching is reflected in the formation of an interest group dealing with this topic at the 1984 meeting of the IUT in College Park, Maryland. Organized by Dr. Arlie Perlberg, this group examined causes of stress and burnout among faculty and studied ways of reducing stress and improving performance (Gmelch & Perlberg, 1984; Perlberg, deGuzman, Gmelch & Melendez, 1984).

In this paper we would like to describe efforts of The University of Georgia over the last three (3) years to mobilize the human resources of the University to address many of the personal and professional renewal needs of the faculty. An encouraging "faculty-helping-faculty" model has emerged which can be replicated at other large institutions. Central to this model is the realization that at a research university the expertise required to conduct such an activity is already present on campus. Leadership and direction, however, are essential.

The University of Georgia (UGA) is a public, land grant university which has an enrollment of approximately 25,000 students and a faculty numbering about 1900. The University is the flagship of a state system of 33 institutions. Like many other institutions UGA experienced significant growth in the 1960s with the size of the faculty more than doubling during that decade. The institution has now reached essentially a steady-state with little change expected in either enrollment or faculty size. The UGA faculty is growing older. Two-thirds of the faculty are over 40 years of age and one-third are over 50. In recent years the emphasis on research at UGA has increased dramatically and the University is now recognized as a major research institution. The University has no formal sabbatical leave program and, until 1982, had no organized faculty development program.

In the fall of 1982, under the leadership of the University's Office of Instructional Development, a group of faculty came together to discuss ways in which the University could address the personal and professional development needs of its community of scholars. Out of this meeting came the idea of beginning the academic year with a University-wide conference on professional and personal renewal. Key elements of this conference were to include: 1) opportunities for the faculty to help identify topics to be addressed at the conference, 2) presenters and facilitators drawn from within the institution, 3) follow-up activities identified for all conference topics, 4) involvement of spouses in all conference activities, and 5) a conference planning committee drawn from senior faculty and staff in the helping professions.

A survey of the entire faculty of the University was completed in the spring of 1983 in order to determine the topics the faculty felt should be addressed in the first renewal conference. The first conference was held in

September 1983 before the opening of school. A total of 24 topics were presented by 36 session leaders during this two-day event. Subsequent evaluation of the conference encouraged the planning committee to begin making plans for a similar activity in the fall of 1984. The second renewal conference was held in September 1984. Approximately 250 faculty, staff and spouses attended each of the renewal conferences. Even though the two conferences were similar many individuals attended both (the unduplicated head count for the two conferences was approximately 350). Session leaders were all unpaid volunteers recruited from the faculty and staff. Each session included the identification of possible follow-up activities available during the academic year for those interested in pursuing the session topic in depth. As a result of this "follow through" concept, several workshops, seminars and discussion groups have ensued over the past two years.

Plans are already underway for a third conference to be held in 1985. The conference planning committee has become self-perpetuating and the annual renewal conference has now become institutionalized.

Identifying Faculty Needs

From the beginning the planning committee sought input from the entire faculty regarding the topics to be addressed in the renewal conference. Before the program was planned for the first conference in 1983 faculty members given an opportunity to respond to a survey designed to identify personal and professional development topics of greatest interest to the group. This survey included an opportunity to evaluaty a list of topics suggested by the planning committee along with a request for additional topics. A similar process was used to select the topics addressed in the second renewal conference held in 1984.

The session topics offered at the two conferences are listed in Table 1. In planning the program for the second conference the planning committee sought to retain the essential elements of the first conference while at the same time adding new topics identified by the faculty.

An important outcome of the renewal conferences at The University of Georgia has been the identification of personal development needs that appear to be most important to the faculty. Each time the faculty was asked to identify topics to be addressed in the conference, personal development topics outnumbered those of a more professional nature. Although all concurrent sessions were well attended, those dealing with personal issues such as financial planning, relaxation, and stress management drew the largest numbers of participants.

The Conference Format

Both renewal conferences followed similar two-day noon-to-noon schedules with a majority of the conference time being devoted to concurrent sessions. The schedule for the 1984 conference is displayed in Figure 1. Two features added for 1984 were a health risk appraisal and evening sessions designed especially for spouses.

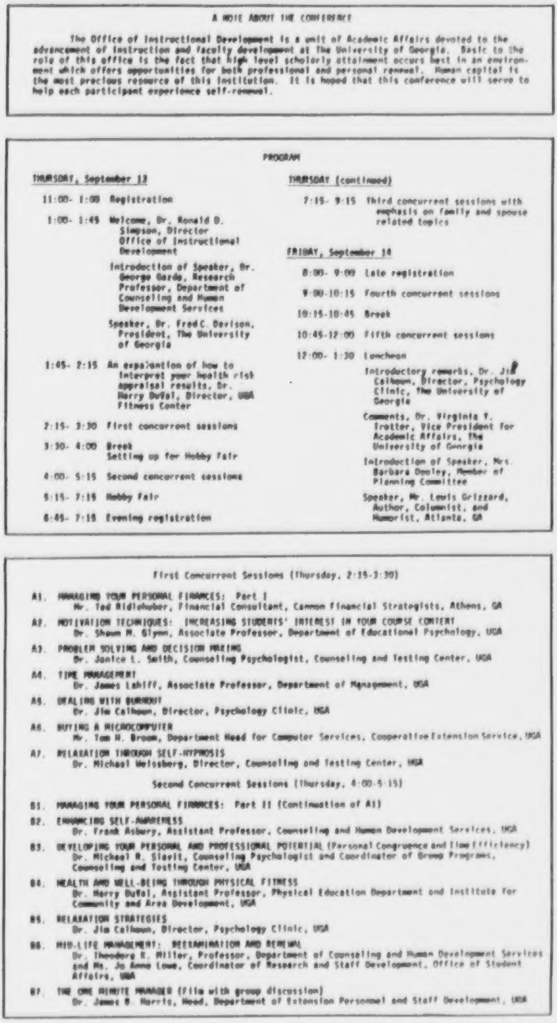
The health risk appraisal (HRA) was managed by the University's Fitness Center, a unit of the Department of Health and Physical Education, and involved the completion of a health risk appraisal questionnaire by conference pre-registrants prior to the opening of the conference. At the opening session results of the HRA were distributed and explained. Each participating conferee received a printout which included a detailed analysis of their "health risks" and suggestions for behavior changes that would lower these risks.

Table 1

The University of Georgia Renewal Conference Session Topics

1983 Conference	1984 Conference
Assertive Behavior--An Overview	Buying a Microcomputer
Career Planning for Personal Renewal	Coping with Your Aging Parents
Coping with Performance Pressures: Demands of Teaching, Research and Service	Couple Communication: The Key to Intimacy
Creative Leave Opportunities	Dealing with Burnout
Dealing with Depression	*Dealing with Depression
Dealing with Family Problems	Developing Your Personal and Professional Potential
Finding Your Way Through the System: Developing a Mentoring Relationship	Effective Time Management in the Home Environment
Foodways to Better Health	Enhancing Self-Awareness
Identifying and Dealing with Problems Faced by Professional Women	*Health and Well Being Through Physical Fitness
Identifying and Dealing with Problems Faced by University Faculty	Improving Self-Esteem
Improving Interpersonal Relations via Effective Communication	*Interpersonal Communication
Improving Your Physical Fitness	*Introduction to Assertive Behavior
Learning How to Relax	Introduction to Speed Reading
Leisure--What's In It For You	*Managing Your Personal Finances
Managing Stress Effectively	*Managing Stress
Managing Your Personal Finances and Investments	Mid-Life Management: Reexamination and Renewal
Managing Your Time Wisely	Motivation Techniques: Increasing Students' Interests in Your Course
Overcoming Problems Faced by Department Heads	Problem Solving and Decision Making
Planning for Retirement	*Relaxation Strategies
Relaxation Through Hypnosis	*Relaxation Through Self-Hynosis
Spicing Up Your Teaching	*Surviving and Thriving in a Dual Career Marriage
Strategies for Survival in a Dual Career Family	*Time Management
Taking the Pressure off Hypertension	The One-Minute Manager
	*Using Alternative Teaching Methods
	Writing Effective Grant Proposals

*Repeated from previous year.



A NOTE ABOUT THE CONFERENCE

The Office of Instructional Development is a unit of Academic Affairs devoted to the advancement of instruction and faculty development at The University of Georgia. Basic to the role of this office is the fact that high level scholarly attainment occurs best in an environment which offers opportunities for both professional and personal renewal. Human capital is the most precious resource of this institution. It is hoped that this conference will serve to help each participant experience self-renewal.

PROGRAM

THURSDAY, September 13

11:00- 1:00	Registration
1:00- 1:45	Welcome, Dr. Ronald D. Simpson, Director Office of Instructional Development Introduction of Speaker, Dr. George Gazda, Research Professor, Department of Counseling and Human Development Services Speaker, Dr. Fred C. Davison, President, The University of Georgia
1:45- 2:15	An explanation of how to interpret your health risk appraisal results, Dr. Harry DuVal, Director, UGA Fitness Center
2:15- 3:30	First concurrent sessions
3:30- 4:00	Break Setting up for Hobby Fair
4:00- 5:15	Second concurrent sessions
5:15- 7:15	Hobby Fair
6:45- 7:15	Evening registration

THURSDAY (continued)

7:15- 9:15	Third concurrent sessions with emphasis on family and spouse related topics

FRIDAY, September 14

8:00- 9:00	Late registration
9:00-10:15	Fourth concurrent sessions
10:15-10:45	Break
10:45-12:00	Fifth concurrent sessions
12:00- 1:30	Luncheon Introductory remarks, Dr. Jim Calhoun, Director, Psychology Clinic, The University of Georgia Comments, Dr. Virginia Y. Trotter, Vice President for Academic Affairs, The University of Georgia Introduction of Speaker, Mrs. Barbara Dooley, Member of Planning Committee Speaker, Mr. Lewis Grizzard, Author, Columnist, and Humorist, Atlanta, GA

First Concurrent Sessions (Thursday, 2:15-3:30)

A1. MANAGING YOUR PERSONAL FINANCES: Part I
Mr. Tod Ridlehuber, Financial Consultant, Cannon Financial Strategists, Athens, GA

A2. MOTIVATION TECHNIQUES: INCREASING STUDENTS' INTEREST IN YOUR COURSE CONTENT
Dr. Shawn M. Glynn, Associate Professor, Department of Educational Psychology, UGA

A3. PROBLEM SOLVING AND DECISION MAKING
Dr. Janice L. Smith, Counseling Psychologist, Counseling and Testing Center, UGA

A4. TIME MANAGEMENT
Dr. James Lahiff, Associate Professor, Department of Management, UGA

A5. DEALING WITH BURNOUT
Dr. Jim Calhoun, Director, Psychology Clinic, UGA

A6. BUYING A MICROCOMPUTER
Mr. Tom H. Broom, Department Head for Computer Services, Cooperative Extension Service, UGA

A7. RELAXATION THROUGH SELF-HYPNOSIS
Dr. Michael Weissberg, Director, Counseling and Testing Center, UGA

Second Concurrent Sessions (Thursday, 4:00-5:15)

B1. MANAGING YOUR PERSONAL FINANCES: Part II (Continuation of A1)

B2. ENHANCING SELF-AWARENESS
Dr. Frank Asbury, Assistant Professor, Counseling and Human Development Services, UGA

B3. DEVELOPING YOUR PERSONAL AND PROFESSIONAL POTENTIAL (Personal Congruence and Time Efficiency)
Dr. Michael R. Slavit, Counseling Psychologist and Coordinator of Group Programs, Counseling and Testing Center, UGA

B4. HEALTH AND WELL-BEING THROUGH PHYSICAL FITNESS
Dr. Harry DuVal, Assistant Professor, Physical Education Department and Institute for Community and Area Development, UGA

B5. RELAXATION STRATEGIES
Dr. Jim Calhoun, Director, Psychology Clinic, UGA

B6. MID-LIFE MANAGEMENT: REEXAMINATION AND RENEWAL
Dr. Theodore K. Miller, Professor, Department of Counseling and Human Development Services and Ms. Jo Anne Lowe, Coordinator of Research and Staff Development, Office of Student Affairs, UGA

B7. THE ONE MINUTE MANAGER (Film with group discussion)
Dr. James B. Harris, Head, Department of Extension Personnel and Staff Development, UGA

Figure 1. 1984 Renewal Conference Program.

Third Concurrent Sessions (Thursday, 7:15-9:15)

C1. INTERPERSONAL COMMUNICATION
Dr. George Gazda, Research Professor, Department of Counseling and Human Development Services and Dr. William C. Childers, Adult Counseling Specialist, Georgia Center for Continuing Education, UGA

C2. IMPROVING SELF-ESTEEM
Ms. Judith Chandler, Department of Adult Education, UGA

C3. EFFECTIVE TIME MANAGEMENT IN THE HOME ENVIRONMENT
Ms. Louise J. Myers, Extension Program Development and Evaluation Specialist, and Dr. James B. Harris, Head, Department of Extension Personnel and Staff Development, UGA

C4. INTRODUCTION TO SPEED READING
Dr. Frederick J. Bremm, Counseling Psychologist and Assistant Professor, Counseling and Testing Center, UGA

C5. COUPLE COMMUNICATION: THE KEY TO INTIMACY
Dr. Glenn Powell, Marriage and Family Therapist, Athens, GA

C6. COPING WITH YOUR AGING PARENTS
Dr. Frances Hendrix, Private Counselor, Athens, GA

Fourth Concurrent Sessions (Friday, 9:00-10:15)

D1. MANAGING YOUR PERSONAL FINANCES: Part I (Repeat of A1)

D2. INTRODUCTION TO ASSERTIVE BEHAVIOR
Dr. Janice L. Smith, Counseling Psychologist, Counseling and Testing Center, UGA

D3. DEVELOPING YOUR PERSONAL AND PROFESSIONAL POTENTIAL (Repeat of B3)

D4. HEALTH AND WELL-BEING THROUGH PHYSICAL FITNESS (Repeat of B4)

D5. MANAGING STRESS
Dr. Jim Calhoun, Director, Psychology Clinic, UGA

D6. BALANCING JOB, FAMILY, AND COMMUNITY
Dr. Frederick J. Stephenson, Associate Professor, Department of Marketing and Distribution, UGA

D7 INTERPERSONAL COMMUNICATION (Repeat of C1)

Fifth Concurrent Sessions (Friday, 10:45-12:00)

E1. MANAGING YOUR PERSONAL FINANCES: Part II (Continuation of D1)

E2. IMPROVING SELF-ESTEEM (Repeat of C2)

E3. WRITING EFFECTIVE GRANT PROPOSALS
Dr. George Brooks, Assistant Director, Department of Conferences, Georgia Center for Continuing Education and Dr. David P. Butts, Head, Department of Science Education, UGA

E4. USING ALTERNATIVE TEACHING METHODS
Dr. David E. Tyler, Professor, Veterinary Pathology, Dr. Wayne A. Crowell, Professor, Veterinary Pathology, Dr. John T. Granrose, Professor, Philosophy and Religion, Dr. James R. Okey, Department of Science Education, and Dr. James H. King, Associate Professor, Educational Media and Librarianship, UGA

E5. DEALING WITH DEPRESSION
Dr. Joan L. Jackson, Assistant Professor, Department of Psychology and Ms. Nancy McNair, Health Educator, University Health Services, UGA

E6. RELAXATION STRATEGIES (Repeat of B5)

E7. SURVIVING AND THRIVING IN A DUAL CAREER MARRIAGE
Presider: Ms. Jo Anne Lowe, Coordinator of Research and Staff Development, Office of Student Affairs, UGA
Panelists: Dr. Karen Wampler, Assistant Professor, Department of Child and Family Development, Mr. Richard Wampler, Division Psychologist, Central State Hospital, Milledgeville, GA and Dr. Brad Courtenay, Head, Department of Adult Education

DIRECTIONS FOR PREREGISTRATION

- This conference is designed for all faculty, staff and spouses. The cost for each participant, which includes refreshments at breaks, a light buffet on Thursday, September 13, and a luncheon on Friday, September 14, will be $16 payable by preregistration till August 20 or $21 at the conference.
- A total of 34 concurrent sessions has been scheduled with each participant having an opportunity to select five to attend. A special evening session focusing on topics of special interest to spouses has been added this year.
- Since a large attendance is expected and participation at many concurrent sessions will be limited in size, those planning to attend the conference are encouraged to preregister as early as possible. Choices for concurrent sessions will be assigned on a first-received basis.
- To register please fill out both the front and back sides of the form to the right, clip with scissors, and mail along with fee to Renewal II, Georgia Center for Continuing Education, UGA Campus.
- Preregistered participants should pick up name tags and session assignments at the opening of the conference.

Figure 1. Continued.

Approximately 80% of the conference participants completed the health risk appraisal form and received risk analyses.

The conference planning committee scheduled a set of evening concurrent sessions in order to expand the opportunities for working spouses and couples to attend the 1984 renewal conference. Topics which were thought to be of special interest to spouses, such as effective time management in the home environment and coping with aging parents, were scheduled during this evening period. Over 100 participants attended these evening sessions.

In addition to concurrent and plenary sessions one additional, unique feature of both conferences was the Hobby Fair. This activity provided faculty with an opportunity to share their hobbies with colleagues. Over 30 displays of hobbies such as wood carving, clock making, and record collecting were on display on the afternoon of the first day of each conference. This event, which occurred in an informal, fair-like environment, was one of the most constructive community building activities of the two conferences.

Summary

The Office of Instructional Development is in its fourth year of full-time activity at The University of Georgia. Over fifteen programs to enhance instruction or meet the personal needs of faculty have been initiated and are now being coordinated by the office. As the staff evaluates current activities and plans for new ones, the Conference on Professional and Personal Renewal has emerged as perhaps the most stimulating program that has been experienced to date. Its success is particularly rewarding since it is faculty helping faculty and seems to continually, through all of its ancillary and follow-up activities, breathe new life into its existence.

This conference has become an impetus for the gradual transformation of a collection of highly specialized academicians and professionals into a community of scholars. It has become an opportunity for individuals at early, mid or late career with special needs to find assistance and support. It has been a way for the administration of a large and complex organization to demonstrate that it cares about its precious human capital. This approach has opened some new and interesting doors for the future.

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IMPROVING TEACHING BY EVALUATING TEACHERS

WEDNESDAY, 3 JULY

1030 - 1200

USING STUDENT EVALUATIONS OF FACULTY PERFORMANCE

Michael Lindsay

University of Wisconsin-Eau Claire

Observation and evaluation of teacher performance are not new phenomena. Indeed, these combined procedures extend back at least to the founding of American public schools by law in 1642 (Lindsay, 1979). At that time, the primary concern was with inspection and control of teacher performance in order to weed out incompetent teachers. Only in the post-World War II period has the emphasis shifted toward using observation and evaluation to improve instructional performance.

One of the more recent developments in the evaluation of instruction has been the use of student observations and ratings of teacher performance. As suggested by Bloom (1983), for example, it is just in the last decade that student evaluation of faculty performance at the college and university level has become "a ritual in American academia" (p. 2). A survey of 288 doctorate-granting institutions indicated that fully 80 per cent of these institutions gave some weight to student evaluations in making administrative decisions about faculty performance (Bejar, 1975).

This paper provides a summary of research on various topics in the literature about student evaluations of instructor performance. In presenting this summary, the paper is intended both to provide guidance for the application of this practice and to stimulate further inquiry into faculty evaluation procedures. The paper includes the following considerations: 1) the teacher effectiveness literature as a basis for constructing student rating instruments, 2) reliability and validity of student ratings, 3) sources of influence on student ratings, and 4) recommendations regarding the subsequent uses of the rating data.

Teacher Effectiveness as a Basis for the Rating Instruments

The attempt to identify characteristics of effective teachers and teaching behaviors has been an elusive and controversial search. Beginning with a prolonged but inconclusive concentration on teacher personality factors, this search has moved more recently toward using dependent variables, including especially student achievement scores in process-product research, as a basis for isolating discrete behaviors or competences that make a difference. With disappointing results in that direction, too, the emphasis has shifted still more recently to the use of vote-counting, meta-analysis, and other means to synthesize results from patterns of research studies.

These synthesizing efforts have suggested that clusters of teaching behaviors--rather than discrete behaviors-- are what make a difference in student achievement scores. Examples of these broader teaching behavior clusters include teacher skills, enthusiasm, structure, flexibility, creativity, clarity, use of student ideas, interaction, feedback, etc. The use of these successful patterns as a basis for instruments to rate the performance of college and university faculty has been discussed by Marsh (1982a, 1982b) and by McBean and Al-Nassri (1982), for example.

Nonetheless, as McDonald and Elias (1976) have shown, even these broader patterns of teacher behaviors are not uniformly applicable to all grade levels, subject areas, and teaching situations. Or, as Darling-Hammond, Wise, and Pease (1983) have suggested, "teachers adjust their behaviors to the changing needs of the teaching contexts" (p. 299). One must conclude, therefore, that the present status of what constitutes effective teaching is varied, multi-faceted, and tentative.

Additionally, the recognition of these broader patterns in the classroom requires the use of more inference than is needed to identify the more discrete but less potent instructional behaviors (Darling-Hammond et al., 1983; Lindsay, 1979). When inferential ratings by trained observers, administrators, and supervisors have been regarded as questionable measures to validate effective teaching (e.g., Soar, Medley, and Coker, 1983), then what can be said about the inferences made by students, as untrained observers? As Newman-Gordon (1985) put it, "The idea of instructing a freshman to rate a senior professor on a scale of four on an official form may strike some people as being ludicrous if not insulting" (p. 10).

Within the broader patterns of behaviors identified in the teacher effectiveness literature, students may be better qualified to make some kinds of judgments than to make others. Goldschmid (1978) suggests that it is difficult for students to judge the level, amount, and accuracy of information presented in class, the relevance of the content, or the teacher's competence in the subject matter. What students can and should evaluate would include, for example, the instructor's clarity and variety of oral, written, and audio-visual presentations; whether or not the students were actively involved in the learning process and stimulated to think about the subject matter; their prior motivation for the course and the interest it generated; the degree of difficulty they experienced in understanding the course content; and their reaction to the teacher's assessment of their work.

However, even the kinds of global ratings that students may be most qualified to make might be too general and vague to provide the kind of specific data needed as a basis for improving instruction and for making personnel decisions about teachers. In sum, then, it appears that the teacher effectiveness literature is presently limited as a basis for developing valid rating instruments to measure instructor performance. Soar (1983) reached this same conclusion when examining previous studies that tested the conventional wisdom about the nature of effective teaching: "there appears to be serious question about using that wisdom as the basis for rating scales identifying quality in the classroom" (p. 10).

Reliability and Validity of Student Ratings

Levin (1979) and Darling-Hammond et al. (1983) mention consistent findings in the research literature that student ratings of teachers and courses are reliable among students and fairly stable over time. Different groups of students are likely to give similar ratings to the same teachers, and the same students will rate teachers similarly at different times. In a more thorough analysis of reliability, Kulik and McKeachie (1975) observed that the internal consistency and stability coefficients reflect the degree of student consistency whereas administrators and researchers are usually more concerned with the consistency of teachers.

When examining class ratings of instructors rather than individual student ratings, therefore, Kulik and McKeachie have found reliabilities to be somewhat higher when determined over a wide range of instructors and when made at the end of the course by groups of students in the same class. Reliabilities are somewhat lower if the ratings come from different courses or different sections of the same course given by the same teacher; if the ratings are made for different instructors in a single discipline or for different instructors teaching sections of the same course; or if the time when the ratings are made is long after the end of the course.

In spite of the general establishment of reliability, "questions about the validity and utility of student ratings limit their acceptance as primary policy instruments for teacher evaluation" (Darling-Hammond et al., 1983, p. 307). Soar et al. (1983) make a similar distinction between the acceptance of reliability and the question of validity: "Ratings reflect the beliefs of raters, but they do not test the validity of those beliefs" (p. 244). Nevertheless, there appears to be a general acceptance of the validity of student ratings as a measure of faculty effectiveness, as evident in their widespread use, even though the validity of rating scales is rarely questioned and most instruments are probably used without evidence of their validity (Selltiz, Wrightsman, & Cook, 1976; Soar et al., 1983).

When validity of student rating scales has been subjected to empirical testing, criterion-related approaches (e.g., student achievement, administrator/peer/alumni/self-ratings) have been used most commonly, with student achievement occurring by far the most frequently (Cohen, 1981; Marsh, 1982b). However, this particular measure has met with much criticism based on conceptual, methodological, ethical, and other grounds (Abrami, Leventhal, & Perry, 1982; Cohen, 1981; Darling-Hammond et al., 1983; Kulik & McKeachie, 1975; Levin, 1979; Marsh, 1982a, 1982b; McBean & Al-Nassri, 1982; Shavelson & Dempsey-Atwood, 1976; Soar, 1983; Soar et al., 1983).

To overcome the various limitations, Soar et al. have called for a structural analysis which tests the assumptions about teacher behavior that underlie any evaluation instrument. Support for this recommendation can be found in Selltiz et al. (1976), who demonstrated that the meanings of scales and their relation to other scales vary considerably with the concept being judged, so that "it may be quite difficult to develop rating scales that provide a consistent measurement of the underlying dimensions of the concept being judged" (p. 431).

When factor analytical approaches rather than criterion-related approaches have been used to validate rating-scale constructs, the results have been more promising. Marsh (1982b), for example, used a multitrait-multimethod analysis and demonstrated both convergent and divergent validity, while Cohen (1981) used meta-analysis and demonstrated external validity. Marsh (1982a) has found validity coefficients in the range of .35 to .80 in studies that have used student achievement to validate student ratings. Such coefficients indicate that there is considerable variance which must be attributed to the effects of other variables, as Marsh concluded: "Consequently, the demonstration that student ratings are valid against various criteria does not preclude the possibility that they might also be biased by factors unrelated to teaching effectiveness" (1982a, pp. 485-486).

The meta-analysis by Cohen (1981) attempted to determine which of the teacher effectiveness factors in the student ratings may have the strongest relationship with student achievement. He found that the relationships between achievement and the global factors of *instruction*-- such as "Skill" (e.g., command of the subject matter; teaching near the level of the class) and "Structure" (which refers to the teacher's planning and organization of the course)-- were stronger than the relationships between student achievement and student ratings of the instructors' *inter-*

personal relations. There was a stronger relationship, in other words, between achievement and the ratings which the students may be less qualified to make according to Goldschmid (1978) than between achievement and the ratings which students may be more qualified to make.

Although Cohen was able to demonstrate external validity, he acknowledged that his efforts could not resolve the questions about internal validity. As an indirect measure, then, achievement has validated ratings, but as a direct measure, achievement may be an insufficient criterion, as implied in Cohen's (1981) conclusion: "It is difficult to determine in any one study, let alone the entire set of studies, the extent to which achievement differences can be attributed to differences among teachers" (p. 305). Even if one granted for the moment that validity has been satisfactorily established, therefore, one must still look to other sources of influence on student ratings of instructor performance.

Other Sources of Influence on Student Ratings

Student ratings of instructor performance may be influenced by several factors other than just teacher performance. General external influencing factors include student, teacher, course, and interaction effects, with much of the variation coming from the latter (Kulik & McKeachie, 1975). Another potential influence on ratings may be the purpose for which the ratings are to be used (Kasten & Young, 1982).

These general influencing factors include such specific variables as general student attitude toward instructors and courses, student interest, experience of the instructor, class size, discipline or department of the course, whether the course is elective or required in status and graduate or undergraduate in level, whether the course is on campus or off campus, etc. (Cohen, 1981; Kulik & McKeachie, 1975; Levin, 1979). As noted by Kulik and McKeachie, "When such influences are controlled, the contribution of the individual teacher to variation in ratings appears to be smaller" (pp. 216-217).

Abrami et al. (1982) have demonstrated in a meta-analysis that instructor expressiveness can have a substantial impact on student ratings but less on student achievement, while lecture content can have a substantial impact on student achievement but less on student ratings. Soar et al. (1983) agree, stating that "ratings of teachers' performance tell us only how favorably a given teacher impresses a rater-- a piece of information that has little or no connection with how competent the teacher actually is" (p. 246).

In spite of the low to moderate relationships between certain teacher, student, and course characteristics and student ratings, however, Cohen (1981) has concluded that the weight of evidence "suggests that student ratings are not influenced to an undue extent by external factors..." (p. 282). It is not clear what would constitute "an undue influence"-- or even if "an undue influence" might vary according to whether the ratings are used for personnel decisions or simply for course improvement-- but even if this were clear in Cohen's analysis, there remains the recognition that other influencing factors do exist and that these factors could interfere with ratings in some ways that may not be evident from the rating instruments alone. Minimally, efforts must be taken in developing student rating instruments that would reduce the possible undesirable effects of other influencing factors. Ultimately, though, allowances must be made when interpreting and applying results obtained from the student rating procedure.

Recommendations for Using Student Ratings

Numerous investigators have expressed concern about the conceptual, methodological, interpretive, and ethical perspectives commonly related to using student evaluations to determine the presence of effective faculty performance. By far the most frequently occurring recommendations emanating from these concerns are 1) to use student ratings only for the improvement of instruction, and not for personnel decisions, and 2) if student ratings are to be used for personnel decisions, to use these ratings as only one evaluative measure among multiple sources of data. Other sources might include faculty self-ratings, peer observations, peer inspection of course materials and examinations, alumni ratings, administrator ratings, etc.

Instructors prefer to use student ratings and seem more willing to use the results when given the opportunity to contribute items to the instrument and when the ratings are collected with the intention of improving instruction instead of making personnel decisions (Kasten & Young, 1982; Ory & Braskamp, 1981). Additionally, faculty are more likely to use the results when given a normative basis for interpreting the results and when given assistance in determining appropriate implementations based on the results (Kulik & McKeachie, 1975; Levinson-Rose & Menges, 1981; McBean & Al-Nassri, 1982).

Finally, two recommendations from Kulik and McKeachie (1975) are pertinent for administrative decisions based on the student rating data. First, administrators should remember that ratings reflect more than teaching skill and at the same time are only partial indicators of teaching effectiveness. Second, administrators need to take into account the possible impact of ratings on both students and faculty, and Kulik and McKeachie have identified both constructive and destructive outcomes.

In sum, we can recognize that the widespread application of student ratings to measure effective teaching exceeds the substantial limitations that have been identified throughout the literature and only summarized in this paper. It is clear that student ratings of faculty effectiveness can serve in a positive capacity in the assessment of instruction, but it is equally clear that limitations must be recognized which exist in the instrument construction and in the data collection, analysis, and utilization. These cautions become especially important when standards of instructor performance are given as much attention as they have received in the past few years and when there exists as much reliance on student ratings as presently exists. The identification of effective teaching remains a challenge to researchers, so we cannot allow ourselves or our public to believe that we yet can conclusively establish what constitutes effective teaching nor to believe that we possess incontrovertible means of measuring effective instruction.

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STUDENTS' EVALUATION AND INSTRUCTORS' SELF EVALUATION OF UNIVERSITY INSTRUCTION

Mordechai Miron
Tel Aviv University

Evaluation of instruction has become an issue for higher education recently, as many universities became aware of the quality of instruction. To overcome skepticism about the effectiveness of education, many institutions have developed evaluation procedures. Some seek external reviews while others examine each individual course within a program. The major purpose of all the efforts is to improve teaching.

Teacher self-ratings have been proposed as a possible source of information for improvement of performance (Centra, 1979). A systematic self-evaluation could be helpful in improving instruction, particularly if combined with evaluations provided by the students. Comparing these two evaluations can be revelatory. Any sharp discrepancy between the two ratings signals the need for a second, closer look (Seldin, 1984).

There has been some research on the relationship between self-ratings and those provided by students. Webb and Nolan (1955), in a military setting, found the highest correlation, .62 for 51 instructors. Two studies in academic settings show correlations between self-ratings and student ratings as .47 for 14 teaching assistants (Doyle and Crichton, 1978), and .49 for 51 faculty members (Marsh, Overall, and Kesler, 1978). Centra (1973) reported a modest relationship between teachers' self-ratings and the ratings given by the students—a median correlation of .21 for twenty-one items. That self-ratings correlate poorly with student ratings, is also shown by Choy (1969) and Blackburn and Clark (1975).

The purpose of this study was to further investigate university instructors' self-ratings and ratings given by students. Comparing these two evaluations would constitute a basis for diagnosis and for pinpointing weaknesses and problems. The diagnosis could help the instructor in planning his next courses and improve his performance. Differences in ratings would be studied with regard to teacher characteristics: holding a teaching certificate and years of experience.

Method

Sample

The sample for the study consisted of 52 instructors of various ranks from the School of Education at the Tel Aviv University. They taught 810 students in 93 classes.

Instrument

Students and instructors responded to 20 items dealing with instructional practices. Items that most faculty members had identified earlier as providing information they would like to receive from their students were included. Among the dimensions of instruction included were the methods of delivery in the course, its organization, student-teacher interaction, stimulation of students and contribution to their personal development. (See Table 1.) Responses to the 20 items were on a five-point agree-disagree scale, with a "not applicable" option provided as well.

The data were collected at the end of the second semester. The evaluation forms were administered during the usual class periods. While the students completed the evaluation forms, the instructors completed the same forms predicting how they were rated by their students.

Results

The relationship between self-evaluations of the instructors and students' evaluations was studied by correlating instructor responses to each of the 20 items with the mean responses of students in their class (N=93 classes). The results are presented in Table 1. The correlations between the two sets of ratings were not particularly high, indicating only modest agreement in the way faculty and students perceived instruction. The highest correlation was .61 (item 20), "the course contributes to my work in the future." The lowest correlation was .03 (item 10), "the objectives are clearly stated." The median correlation was .28 and was significantly different from zero.

Insert Table 1 about here

Secondly, differences between the ways faculty and students rated instruction were investigated by a measure of discrepancy (MD). It calculated the sum of the absolute discrepancies between self-ratings and students' ratings on each item.

$$MD = \sum_{i=1}^{20} |I_i - S_i|$$

I_i = instructor's score on item i.

S_i = mean score of students in their class on item i.

MDs could range from 0 to 4; thus lower values represent greater agreement between instructors' and students' evaluations. The measures of discrepancies (MDs) were moderate, indicating again modest agreement in the way instructors and students perceived teaching. The lowest MD was .5 of a score, the highest, 2.5 scores, and the median MD was 1.4.

Another question regarding instructors-students' discrepancies was whether those discrepancies were related to instructors with varying training in teaching. In other words: were the self-ratings of instructors holding a teaching certificate more similar to their students' ratings, than they were to those not holding a teaching certificate? For this analysis the instructors were grouped into two categories: holding a teaching certificate and not holding a teaching certificate. Table 2 presents the results.

Insert Table 2 about here

There were no differences regarding instructors-students' discrepancies between those instructors holding a teaching certificate and those who do not hold one. The median correlation for the holders of the certificate was .26 and the median correlation for the non-holders was .25. Within the group of those holding a certificate the highest correlations were .69 (item 20), "the course contributes to my work in the future," and .60 (item 19), "the course develops motivation." Within the group of those not holding a certificate the highest correlations were .59 (item 13), "the instructor demonstrates enthusiasm for teaching," and .58 (item 6), "too much homework is given in this class."

A final question regarding instructors-students' discrepancies was whether those discrepancies were related to instructors with varying periods of teaching experiences. For this analysis "teaching experience" consisted of three categories: one to four years, five to eight years, and nine years or more. The results are given in Table 3. It seems that the self-ratings

Insert Table 3 about here

of less experienced instructors were closer to student ratings. The median correlation for the least experienced instructors was .44, the median correlation for the five to eight years of experience was .33, and the median correlation for the most experienced instructors in the study, was .18. Within the least experienced group the discrepancies between self-ratings of instructors and student ratings were most notable in item 19, "the course develops motivation" ($r=.02$), and in item 5, "the discussions contribute to understanding" (r=.06). Within the group of five to eight years of experience the discrepancies were most notable in item 3, "too much material covered" (r=.03), and in item 11, "the instructor organizes learning situation effectively" (r=.03). Within the most experienced group the discrepancies were most notable in item 5, "the discussions contribute to understanding" (r=.01), and in item 8, "the class is an intellectual challenge" (r=.01).

Discussion

The comparison of instructors' self-ratings of their instruction with students' ratings in 93 classes disclosed a modest relationship between the two sets of evaluations. There might be several explanations to this lack of agreement: (1) Some instructors simply do not know how to evaluate their own performance in class; (2) Some know their strong and weak points but do not know what to do with the information; (3) Others might be able to recognize strength and weakness in their performance but would not disclose it since this information might be held against them if their assessments were used in making tenure and promotion decisions; and (4) The relatively low correlations between instructors' self-ratings and students' ratings might be due to the restriction of the range, since the standard deviations were somewhat smaller for items with lower correlations.

Discrepancies between the ratings were most notable in relation to course objectives, organizing learning situations and to the preparation of the instructor for class. These areas of instruction would seem to be particular ones in which many instructors could profit from student feedback.

There were no differences between holders and non-holders of teaching certificates regarding instructors-students' discrepancies. However, differences were found with regard to years of teaching experience. The least experienced instructors were best in predicting how they were rated by their students. This might be explained by the fact that in the first few years of teaching at the university, instructors are more responsive and sensitive to students' needs in addition to conducting research and publishing its results. After getting promoted and tenure the interest in students tends to decline.

These conclusions must be treated with extreme caution, since the matter was investigated with regard to a rather small sample, in one school within the university.

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Table 1

Correlations Between Self-Ratings and Student Ratings (N=93)

	Items (*)	r
1.	An adequate prerequisite for other courses.	.32
2.	Overlapping with other courses.	.25
3.	Too much material covered.	.22
4.	The assignments contribute to understanding.	.12
5.	The discussions contribute to understanding.	.22
6.	Too much homework.	.35
7.	The instructor demonstrates command of subject matter.	.12
8.	The class is an intellectual challenge.	.26
9.	The course is responsive to the needs of the students.	.30
10.	The objectives are clearly stated.	.03
11.	Effectively organizes learning situations.	.07
12.	The instructor is available for help.	.37
13.	Demonstrates enthusiasm for teaching.	.45
14.	Encourages critical thinking.	.38
15.	Class time is used well.	.35
16.	A boring course.	.40
17.	The material is clearly presented.	.26
18.	The instructor is well prepared for class.	.09
19.	The course develops motivation.	.31
20.	The course contributes to my work in the future.	.61

(*) Item content has been presented here rather than the actual items.

Table 2

Correlations Between Self-Ratings and Student Ratings

by Varying Training in Teaching (N=52)

Items (*)	Holding teaching certificate	Not holding teaching certificate
1. Adequate prerequisite	.30	.20
2. Overlapping	.16	.34
3. Too much material	.15	.31
4. Assignments contribute	.11	.20
5. Discussions contribute	.15	.38
6. Too much work	.27	.58
7. Knows his subject matter	.06	.22
8. Intellectual challenge	.39	.07
9. Responsive to students' needs	.11	.50
10. Clear objectives	.05	.01
11. Organizes learning	.01	.27
12. Helps students	.25	.52
13. Enthusiasm for teaching	.45	.59
14. Encourages thinking	.38	.35
15. Time used well	.55	.11
16. Boring course	.48	.02
17. Clearly presented	.39	.05
18. Well prepared	.14	.03
19. Develops motivation	.60	.23
20. Contributes to work	.69	.54

(*) Item content has been presented here rather than the actual items.

Table 3

Correlations Between Self-Ratings and Student Ratings

by Years of Teaching Experience (N=52)

	Items (*)	Number of years of teaching		
		1-4	5-8	9+
1.	Adequate prerequisite	.74	.27	.32
2.	Overlapping	.39	.34	.07
3.	Too much material	.72	.03	.10
4.	Assignments contribute	.69	.15	.38
5.	Discussions contribute	.06	.41	.01
6.	Too much work	.70	.15	.39
7.	Knows his subject matter	.45	.32	.13
8.	Intellectual challenge	.31	.50	.01
9.	Responsive to students' needs	.72	.16	.13
10.	Clear objectives	.43	.23	.20
11.	Organizes learning	.27	.03	.02
12.	Helps students	.13	.34	.43
13.	Enthusiasm for teaching	.45	.47	.38
14.	Encourages thinking	.50	.36	.28
15.	Time used well	.38	.38	.42
16.	Boring course	.28	.41	.16
17.	Clearly presented	.59	.27	.29
18.	Well prepared	.39	.10	.08
19.	Develops motivation	.02	.41	.09
20.	Contributes to work	.64	.46	.58

(*) Item content has been presented here rather than the actual items.

Appendix 8

UNIVERSITY OF MARYLAND UNIVERSITY COLLEGE
CONFIDENTIAL RATING OF INSTRUCTION BY STUDENTS

University College conducts a number of activities and programs designed to foster excellence in teaching. This questionnaire is part of that effort. It gives you a chance to express anonymously your views of this course and the way it has been taught. **We do pay attention to these ratings and to your comments!**

DIRECTIONS:

1. Your instructor should appoint a student to distribute, collect, and mail these forms to University College.
2. Please fill in the course information requested below. (Your instructor will tell you what to write in the CODE section.) *We cannot process your form unless you fill in ALL the information about this course.*
3. Then provide thoughtful answers to the evaluation questions below. Circle your response. If you change your mind, put an x through your first response and then circle your new choice.
4. Give your completed form directly to the student appointed to return the forms to University College.

COURSE INFORMATION:

Dept: _________ Course: _________ Sect. _________ Code: _________ Instructor: ___________________________ Date: _________

SPECIFIC QUESTIONS ABOUT THIS COURSE:

1 = Never/Rarely
2 = Seldom/Little
3 = Occasionally
4 = Often/Usually
5 = Almost always
NA = Not applicable

1	What the instructor was trying to accomplish with this course was clear to me.	1	2	3	4	5	NA
2	What was actually taught was in agreement with the course objectives.	1	2	3	4	5	NA
3	The instructor presented the material in a way that could be clearly understood.	1	2	3	4	5	NA
4	The instructor stimulated my interest in the subject (OR motivated me to learn).	1	2	3	4	5	NA
5	The instructor used class time well.	1	2	3	4	5	NA
6	The instructor seemed receptive to new ideas and others' viewpoints.	1	2	3	4	5	NA
7	The instructor encouraged students to seek help when necessary.	1	2	3	4	5	NA
8	The course added to my knowledge or skill (OR encouraged critical thinking).	1	2	3	4	5	NA
9	The instructor encouraged relevant student involvement in class activities.	1	2	3	4	5	NA
10	The course content was appropriately difficult for the course level (upper or lower level).	1	2	3	4	5	NA
11	Grades were assigned fairly and impartially.	1	2	3	4	5	NA

OVERALL RATING OF INSTRUCTOR AND COURSE:

1 = Very poor
2 = Poor
3 = Average
4 = Good
5 = Excellent
NA = Not applicable (I have not had other instructors or courses)

12	My overall rating of this INSTRUCTOR compared to other college instructors is:	1	2	3	4	5	NA
13	My overall rating of this COURSE compared to other college courses is:	1	2	3	4	5	NA

OPTIONAL ADDITIONAL QUESTIONS:

1 = Lowest
3 = Middle
5 = Highest

14	Your instructor may wish to ask for more information about this course.	1	2	3	4	5	NA
15	Use these items for your responses.	1	2	3	4	5	NA

YOUR COMMENTS ARE WELCOME. On the reverse of this sheet, please list the two or three MOST POSITIVE things about this course and the two or three LEAST POSITIVE things. If you have specific suggestions for your instructor, please list them as well. We will return these comments to your instructor after the grades for the course have been submitted.

MASTER TEACHING: CURRICULUM SUPERVISION, TEACHER TRAINING, AND FACULTY EVALUATION

John T. Trahey
Loyola University of Chicago

At a departmental retreat in January 1983 the Theatre Department of Loyola University of Chicago decided to institute a Master Teaching Program the following fall. Several concerns were operative in this decision. First, our undergraduate theatre major is a text-oriented, highly academic, liberal arts approach to our field. We felt that the core of this program, text analysis, historical perspectives, and dramatic literature studies needed to be taught in a carefully monitored sequence so that all students taking the eight courses involved would acquire essentially the same training and knowledge. The key word here is essentially because we assumed that some differences would occur due to the varying methodologies and emphases pursued by individual teachers. Second, our department has three natural divisions: (1) academic dramatic text study, (2) technical theatre and design training, and (3) directing and acting training for performance. Unfortunately, these three areas tend to operate independently of one another. We felt that we needed to find ways to keep them in contact so that students would realize that their work in any one area was and is connected to their work in the other two areas.

Third, we have a full-time faculty of eight. But, since we have a variety of very specialized courses to offer in the major and several courses which must be taught as general offerings for the College of Arts and Sciences, the School of Education, the School of Nursing, the Business School, and the University College (Night School), we employ an average of ten part-time teachers a semester. We felt that we needed to more effectively integrate the teaching of such specialized subjects as Mime, Dance, Singing, Sound Design, Lighting Design, and Playwriting, to mention a few, with other courses offered in our major. We also thought that theatre courses taught for non-majors from outside our discipline needed to be monitored to insure that the content and quality of the offerings were maintained according to certain predetermined standards.

Fourth, the University has been insisting more and more in recent years on two things with regard to teaching: (1) that new teachers should receive as much guidance and help in teaching as possible so that the quality of what they do will effectively help them progress toward tenure and promotion, and (2) that evidence of the quality of teaching, good or bad, be available for tenure, promotion, and merit salary increase decisions from peer evaluation as well as from traditional sources such as student opinion. In our department the chairman has traditionally visited all classes. Visitation by the Master Teacher as well was seen as another way of obtaining peer evaluation evidence, a way of providing a second opinion from direct observation.

In the spring of 1983 our chairman appointed me the Master Teacher who would visit all classes taught by our full and part-time faculty. I began doing this in the fall of that year. At the date of this writing I have done this for three semesters, Fall 1983, spring 1984, and fall 1984. Most of our full-time faculty have been accustomed to visit each other's classes for some years, so this was not something threatening for them. But for one or two of them and for several of the part-time faculty my evaluating presence in their classes was at first a fearful thing. My initial effort, therefore, was to emphasize the positive, to assist them in any way I could, to talk with them about the classes I had seen, and to remain as non-judgemental as possible in reporting what had happened in the classes.

My method was as follows. First, I sent each teacher a form on which he or she was to list each of the classes he or she taught. They were then to offer me three possible dates for visitation for each class. Usually they indicated what the class would be taking or doing each day. I would then pick one of the three dates for these classes and so inform the teachers. When I attended the class I took extensive notes about what was happening - very few judgments about it, some suggestions for improvement, little negative criticism of any kind - for the most part, just what I objectively observed. After each class I would speak to the teacher about what had transpired. Usually this discussion centered on how the class observed fitted into the overall directions and purposes of the course, on what the teacher felt he or she needed in the way of support from the department, and on how the course related to other courses in the deparment. At the end of the semester I wrote a report to our chairman which included the descriptions of the classes visited. Each teacher received a copy of the descriptions of his or her classes. At the end of the whole report I made specific recommendations to the chairman which were evaluative and confidential. These were not shared in copy form with the teachers, but were probably communicated to the individual teachers when they had their yearly conference with the chairman.

A number of problems emerged. Following are a few examples of these:

(1) many of the part-time faculty who were teaching our majors did not understand how their courses related to other courses in the major. They did not know what they could expect their students to know when they began their courses and they were frequently unsure about what the students were supposed by the department to have acquired when the courses were completed. (2) Many of these part-time faculty felt out of touch with our department, particularly with our full-time faculty. This problem was aggravated by the fact that many of these teachers taught their classes in locations on campus but far distant from our theatre, and at times outside our regular class time schedules.

(3) Some classes in the performance area were being taught without regard to the structured sequence the courses in this area were ideally supposed to follow. (4) Many classes in both the design/technical area and the performance area were proceeding without sufficient awareness of the text studies the students were doing in the academic area. (5) A number of classes seemed to be held in places with inadequate space, or light, or equipment, or desks, or other things necessary for the optimum results in the work of the courses involved.

(6) A number of teachers, both full and part-time, felt that they were teaching in a void, that they had no one except their students with whom they could share their teaching methodologies, experiments, assignments, projects, and so forth. (7) Everyone in all areas seemed to experience a division between our classroom activity and our production programs for both mainstage and studio theatre shows. (8) The teachers of non-major courses found it difficult to connect theatre courses for biology, nursing, business, and other majors with what the department does

or with what they themselves do in it.

None of these problems has been completely solved or remedied. But much progress has been made. Recommendations for changes in class times and locations have in some cases been implemented and successful. New equipment recommendations have been less easily accomplished. Just talking to the Master Teacher, however, has helped many of our faculty feel better about what they do in relation to what others are doing in the department. Many teachers welcomed the opportunity to discuss their teaching methods, goals, and experiences with another teacher. This was also one way in which they were able to get information about what other teachers were doing in the department.

Three major developments have resulted from the Master Teacher program: (1) a revitalization of the supervisory committees operative in the three areas of our department, the academic, the performance, and the design/technical areas, (2) the institution of a steering committee to coordinate the efforts being made in the three areas, (3) the formation of a committee to supervise our non-major course offerings. In addition to these efforts, we are developing ways to honor and to compensate better the part-time teachers who have helped us over longer periods of time, and we are planning another departmental retreat to be devoted exclusively to a discussion of these problems.

Each of the areas in our major has a committee composed of all faculty teaching in the area, all staff involved in the area, and two students concentrating in the area. The need for these committees to meet in full numbers has been communicated to the chairpersons of all three. They have indicated that they will make every effort to convene and to communicate about the problems mentioned above. In order to provide inter-area information to these various committees, each committee has one member appointed from another area by the departmental chairperson. The Master Teacher attends the meetings of all three committees. We hope that the information exchanged, the definition of goals, and the face to face communication experience in these committee meetings will eventually result in the improvement of teaching in our department.

A steering committee formed by the chairman, the Master Teacher, and one member of each of the area committees will help to coordinate recommendations which originate in the various areas. We are attempting to have part-time faculty who have been with us for a number of years rewarded financially better than newcomers. At present all part-time remuneration is the same, regardless of length of service. We are also attempting to reward the loyalty of these part-time faculty with the title of Adjunct Professors of Theatre. Finally, we hope that the retreat we plan to have in January 1986 will result in more fully coordinated Theatre Department teaching both for our major and non-major students.

We fully expect that the direct committee confrontation of problems such as course objectives and course relationships with other courses within and between the three areas of our major will lead to better teaching. It should get all the faculty communicating with each other about what they do and want to do and about how to do it better. It should also result in a great deal of clear evidence about the quality of teaching. We expect that all our faculty will improve their teaching as a as a kind of natural result of this process.

Two sample class descriptions by the visiting Master Teacher are appended (Appendix I). There is also an example of the Master Teacher's December 1984 confidential letter to the chairman (Appendix II). Teachers' names have been omitted in these examples to protect the reputations of the persons involved from any possible harm.

Appendix I - Theatre History Class

The class started with a quiz on their reading. There followed a discussion of the production of The Merchant of Venice at The Body Politic which they all had seen. The teacher discussed the characters of Antonio, Bassanio, Portia, and Shylock as they were done in the production. The teacher felt that the production made too light of the scene in which Portia gave Bassanio the ring - and thus trivialized the ring business in Act V. He noted that in this production Bassanio played all the suitors and thus his choice of the lead casket was explained in a novel way. The class discussed the settings and how Venice and Belmont were not very well created by them. Shakespeare's language does that better. The teacher walked among the students during this discussion and this seemed to help keep the class energy high. He related what the students had seen to their study of the historical Elizabethan stage. In interpreting the play the teacher argued his positions well, but he did not indicate the opposing viewpoints very much. Perhaps it would be good to point out various possible views and then let the students decide for themselves, e.g., the "ring scene" interpretation. A good class.

Stagecraft Lighting Class

The teacher gave each student a color gel book so that they could all follow his discussion of the different materials, colors, and thicknesses used in gels. He also passed out a sheet with drawings of various types of lamps on it and explained how each one was made and used. He showed them a quartz mogul bi-post lamp and explained the differences between quartz and incandescent light - quartz gives a wider spectrum of light wave length and has a "better color temperature." He then discussed the color temperatures of mercury vapor and xenon lights and their relationship to brightness. He talked about how to handle lamps, retrofitting, light center length, Kelvin degrees for color, the additive color system (no color equals black, all colors equal white) and how it differs from the subtractive color system used in painting. It was difficult to hear the teacher in the theatre space; and it was almost impossible for students to hear other students who asked questions because they were spread out over such a large area. It would be better to have this class in a more confined space. Then, the teacher would be able to monitor better whether or not the students are understanding what he says. If the class must be held in the theatre, perhaps the students should sit in a tighter group behind the crossover aisle. The teacher could have a table there on which to display materials. This was a very substantive class.

Appendix II

Confidential Letter to Chairman, December 1984

Enclosed are my observations about the classes I attended this past semester. I particularly commend Professor A for his teaching of Appreciation of Theatre Practice, and Professors B and C for connecting the Characterization class and the Voice and Diction class.

I would like to recommend that more conscious contact be made between the academic classes and both the performance and the design classes. A start would be for the performance and design teachers to become more familiar with the texts being studied in the academic courses. The overlapping that occurred this semester between World Drama and Characterization was wonderful - but it was to some extent only a fortunate accident.

I suggest that design teachers assign plays for reading and then require designs to be done either from these plays or from plays the students are taking in the academic classes. Discussions about the merits of designs for plays most of the students in class have not read are not very educationally productive.

It does not seem to me that there is much energy or joy or excitement in Professor D's classes. It appears to me that the teacher is bored, and the students are bored. I do not have a constructive solution to this problem, but it must be noted. He has been teaching this class for years - perhaps he needs a year off from it.

It has come to my attention about Professor E: (1) late arrivals at class are habitual, (2) grades were late getting to the Registrar, (3) he was not present to receive the final design projects. This teacher seems to be so involved with outside projects that he is not giving his classes or his production work here sufficient attention. I know Professor E can make a very positive contribution to our work because he has done so in the past. The design/technical program could flourish better if he were once again to become a visible presence in our midst.

TEACHING WRITING

WEDNESDAY, 3 JULY

1030 - 1200

TEACHING UNDERGRADUATES THE FINEPOINTS OF WRITING FOR PUBLICATION

Claudia M. Caruana
Long Island University, Brooklyn, N.Y.

There has always been an "air of glamour" about having one's work published. Behind most bylines, however, are numerous revisions, research, a concerted effort to find the "right" market, and inadequate or often no renumeration for one's efforts.[1]

Although writing is a necessary skill, whatever one's occupation, professional writing is not always a part of the undergraduate curriculum (Barkas, 1985, p.2) or may be available only to students enrolled in a communications arts or journalism program.

Ideally, a writing for publication course (sometimes called non fiction, feature, magazine article, or science and medical writing) should help students "know what they want to say; identify their audience; organize thoughts; and write and rewrite." (Barkas, 1985, p.3). Moreover, the course curriculum should help instill in the student a sense of self-confidence, because, as Barkas writes, "it is a lack of self-confidence that inhibits committing ideas to paper.(p.3)

No accurate statistics as to the number of writing for publication type courses offered at U.S. colleges or adult continuing education centers, much less the number of students who take them, exists.[2] Most courses are given under the auspices of the journalism, communications arts, or sometimes English departments, for students who will make part or all of their livelihood from the media.[3] Unless there is an interdisciplinary approach to writing at the university, the needs of other students whose future occupations will require professional writing skills--engineering, teaching, business, science, management, social services, even graduate work--may be overlooked.

Despite many claims to the contrary, writing skills can be taught. Barkas (1985, p.8) describes it as a seven-step process, which includes:

- deciding on the topic--what one wants or has to write about;
- gathering facts;
- organizing information;
- writing a first draft;
- revising and reworking first draft;
- submitting the material to instructor or editor; and
- integrating criticism of the writing, if and when appropriate, and rewriting, if necessary.

This writer, whose background includes a professional career as a magazine writer and editor, believes attributes of a good writer should be, but are not limited to, resourcefulness; the ability to take direction well; good interviewing skills; "stick-to-itness;" and a willingness to review, revise, and rewrite one's work. The writer, ideally, should see a "story" from the facts gathered; create reader interest; and show, not tell in the finished product, why the information is important. Obviously, professional writing is not for dilettantes.

Teaching Writing Skills

Instructors of professional writing have been likened to coaches. In order to stimulate talent, it often is necessary to "put pressure" on students and encourage self-discovery, self-evaluation, and self-confidence. Moreover, an instructor's enthusiasm for a student's project can provide an additional stimulus for writing success.

Although the experiences of most writing for publication instructors can spark student interest, there is also need for quality textbooks for a more "standard" approach to writing. Fortunately, many excellent textbooks in this area have been written. Notable ones include The Complete Guide to Writing Non Fiction, by the American Society of Journalists and Authors, edited by Glen Evans (Writer's Digest Books); Magazine Article Writing: Substance and Style, by Betsy Graham (Holt, Rinehart & Winston); Writing and Selling Non Fiction, by Hayes B. Jacobs (Writer's Digest Books); Magazine Article Writing Workbook, third edition by John Behrens (Steffens Press) among others.

Assignments

Perhaps the most important aspect of quality writing is doing it regularly. This can not be overemphasized. It is not unrealistic to expect students to complete one, full-length, researched article during the typical 15-week college semester. (In more advanced workshop courses where the basis do not need to be discussed, two or three full-length, researched articles are required.) It is also not unrealistic to expect students to complain about the amount of work required of them.

In my magazine article writing course, for example, ancillary assignments have included research proposals; a detailed outline of the proposed full-length article; query letters (the sales pitch to the editor); 1,500-word and 750-word essays on the same topic, showing the importance of editing and concise writing; a personality profile of a university official or student "celebrity"; detailed criticisms, called "author's memos," describing the editorial faults of already published materials or bogus stories written by the instructor; a detailed report about a visit with a magazine or journal editor who purchases or accepts free lance contributions; and a cover letter describing the written article. An assignment is due each week.

Without doubt, this is a busy agenda for both student and the instructor who must evaluate and grade material. The reasoning behind it is simple: the engineer who is required to write and present a paper at an engineering society meeting will be writing it at the same time he or she is working full-time; the business executive, who must research and write a presentation for the firm's board of directors, will have to make prudent use of her or his time; and the individual who works in the media probably will be working on several writing projects simultaneously.

Depending on the students enrolled in the course, assignments can be tailored to focus on special areas. For example, if the class consists of many engineering and science students, it would be logical to focus some of the discussion on publishing problems specific to them--technical society papers/symposiums; academic and scientific journalism as well as the more popular publishing outlets.

What follows are several other suggestions for components of a writing for publication course.

- The Need for Establishing Good Writing Habits. This, too, can not be overemphasized. Deadlines must be supreme. Procrastination literally can cripple even the best of writers. Writing an entire article the night before the deadline is certain to spell editorial disaster. By the use of progress reports to insure deadlines are met, the instructor helps students better manage their time. A reduced grade should be automatic for work not completed on time.

- The Need for Rewriting. We live in a "quick-fix" world: if it is not completed immediately to one's satisfaction, it is abandoned. This is not the case, however, with professional writers who are asked by editors to rethink, revise, rework, and rewrite material. Sometimes, these changes do make for a better finished product; other times, editors change their minds and want to "see something entirely different." For as frustrating as this might be, it is a fact of life for a professional writer. Students should be exposed to this phenomenon, and when appropriate, asked to rework and

and rewrite an assignment with the instructor providing concrete suggestions or examples of how the material can be improved.

- The Need for Research. One of the initial difficulties of students working on writing assignments is that they are unable to find the information needed or required. If students have not been introduced to research methods by the college library staff, it might be advantageous for the instructor to integrate a lecture on typical reference/research tools of the writer within the context of the course. (Caruana, 1984)

- The Need for Knowing the "Nuts and Bolts" of Publishing. How are articles selected for publication in trade journals, popular magazines? What rights should a writer "lend" to a publisher? Why should a writer sign a contract with a publisher? Hoe does the Freedom of Information Act affect writers? What does "writer for hire" actually mean? These are just a few of the issues that should be discussed in a writing for publication course in addition to the actual task of writing itself.

- The Need for Understanding the Marketplace. Unless a student reads the tupe of publications for which she or he would like to write, selling publishing material can be difficult. This can be remedied by the instructor assigning each student a magazine to "dissect"--examine several issues and write about the types of articles published, whether the articles are staff or outside contributions.

It is also advantageous for the instructor to bring to class a variety of magazines-professional, advertise-sponsored, trade, association--so students can see what is published in a variety of fields.

Last semester, for example, students in my magazine article writing class saw TLC (for hospital patients); Diabetes Self-Management (a special magazine for insulin-dependent diabetics); Sunrise (Kuwait Airlines in-flight); Hudson Valley (regional); Graduate Engineer; and Ford Times (for owners of Ford automobiles), all examples of the not-well known publications that accept material from outside or free lance writers.

It should be pointed out that many magazine and journal editors will provide sample issues, in addition to their writers' guidelines, either without charge or for a nominal (usually postage) fee. Some of these types of publications may be available in the college library.

- The Need to Speak with Editors. A major component of every writing for publication course should be speaking with an editor at a magazine or newspaper who purchases or accepts free lance material. When in-person interviews can not be arranged becuase of the magazine's location, a telephone interview might be arranged. In some cases, especially when business students are enrolled in a writing for publication course, an interview with a writer in a medium- or large-sized company might be appropriate.

Although in my experience there has been initial student resistance to this assignment ("What am I going to talk to the editor about?") with the help of a series of "ice breaker" questions distributed to each student prior to the interview, student response has been positive. Many are pleased that they saw a "real" magazine operation; others are surprised that the instructor was "telling them the truth about the business." Most editors are cooperative with requests for interviews because they realize that the students they may be helping or talking with today, may be submitting work to them tomorrow.

* * *

Most, if not all, of the full-length articles written by my students, focused on topics of special interest to them. Rarely have students written about issues with which they have little interest or familiarity. It should be emphasized, however, that most professional writers do research and write about topics which may be initially unfamiliar to them, and in advanced writing workshops, many students choose such topics.

My students, for example, have written about child snatching (student's son was taken by her ex-husband to the Middle East); special education classes for the retarded and emotionally disturbed; premenstrual stress syndrome; new hope for herpes victims; pre-arranged marriage customs in India; sexual abuses by relatives (student was a victim); drug busts on New York City's lower East Side (student is a N.Y.C. police officer, who is also pursuing a college degree); the plight of the Vietnamese boat people when they arrived in The Philippines (student, a commercial photographer, traveled to the Philippines to claim his nephew); sheltering New York City's homeless; purchasing running shoes; an alcoholic's road back to sobriety (student is a recovering alcoholic); the history of the Brooklyn Bridge; the lack of dancing partners for the "older" unattached woman (age 40+); computers in the hospital medical laboratory (student is a degreed lab technican working on a second degree); Swedish massage; and others.

Some of the better articles have been or are scheduled to be published in local, regional, and national publications; others have

Last semester, for example, students in my magazine article writing class saw TLC (for hospital patients); Diabetes Self-Management (a special magazine for insulin-dependent diabetics); Sunrise (Kuwait Airlines in-flight); Hudson Valley (regional); Graduate Engineer; and Ford Times (for owners of Ford automobiles), all examples of the not-well known publications that accept material from outside or free lance writers.

It should be pointed out that many magazine and journal editors will provide sample issues, in addition to their writers' guidelines, either without charge or for a nominal (usually postage) fee. Some of these types of publications may be available in the college library.

- The Need to Speak with Editors. A major component of every writing for publication course should be speaking with an editor at a magazine or newspaper who purchases or accepts free lance material. When in-person interviews can not be arranged becuase of the magazine's location, a telephone interview might be arranged. In some cases, especially when business students are enrolled in a writing for publication course, an interview with a writer in a medium- or large-sized company might be appropriate.

Although in my experience there has been initial student resistance to this assignment ("What am I going to talk to the editor about?") with the help of a series of "ice breaker" questions distributed to each student prior to the interview, student response has been positive. Many are pleased that they saw a "real" magazine operation; others are surprised that the instructor was "telling them the truth about the business." Most editors are cooperative with requests for interviews because they realize that the students they may be helping or talking with today, may be submitting work to them tomorrow.

* * *

Most, if not all, of the full-length articles written by my students, focused on topics of special interest to them. Rarely have students written about issues with which they have little interest or familiarity. It should be emphasized, however, that most professional writers do research and write about topics which may be initially unfamiliar to them, and in advanced writing workshops, many students choose such topics.

My students, for example, have written about child snatching (student's son was taken by her ex-husband to the Middle East); special education classes for the retarded and emotionally disturbed; premenstrual stress syndrome; new hope for herpes victims; pre-arranged marriage customs in India; sexual abuses by relatives (student was a victim); drug busts on New York City's lower East Side (student is a N.Y.C. police officer, who is also pursuing a college degree); the plight of the Vietnamese boat people when they arrived in The Philippines (student, a commercial photographer, traveled to the Philippines to claim his nephew); sheltering New York City's homeless; purchasing running shoes; an alcoholic's road back to sobriety (student is a recovering alcoholic); the history of the Brooklyn Bridge; the lack of dancing partners for the "older" unattached woman (age 40+); computers in the hospital medical laboratory (student is a degreed lab technican working on a second degree); Swedish massage; and others.

Some of the better articles have been or are scheduled to be published in local, regional, and national publications; others have been the basis of future research or additional projects.[4]

Conclusions

Instructors of writing for publication courses want to provide industry with tomorrow's talent. In order for them to do so, it is essential that they provide their students with realistic and challenging assignments; adhere to strict deadlines; be aware of the requirements of a variety of publications that students may submit work; insist that sub-standard work be redone; and otherwise expose students to the rigors and responsibilities of what it takes to be published.

# # #

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Telephone conversation with staff member of the Association for Education in Journalism and Mass Communications, January 22, 1985.

Telephone conversation with Dodi Schultz executive vice president of the American Society of Journalists and Authors, Inc., January 25, 1985.

Telephone conversation with Gail Zwirkel, assistant director of the Authors Guild, December 14, 1984.

Notes

[1] Rates for full-length articles (2,500 words or more) are not standard. Some publications, especially technical or professional, do not pay for free lance submissions. According to data provided by the American Society of Journalists and Authors, Inc., there are less than 15 American magazines that pay $2,500 or more for a full-length article. Most magazines pay under $750 for a full-length article.

[2] Although there is statistical data regarding the number of students who graduate from different journalism sequences, newspaper, magazine, broadcasting, etc., no specific information regarding the number of students who take particular courses could be provided by the Association for Education in Journalism and Mass Communications.

[3] It is difficult to ascertain how many individuals actually make their livelihood from writing,exclusively. The American Society of Journalists and Authors, Inc., one of the largest and better known associations for professional writers, had 719 members as of January, 1985. The Authors Guild has more than 28,000 members, most of whom have written books. According to statistics provided by Ms. Schultz, the median income from free lance writing (magazines, books, and others) for members, was $17,500 in 1980. A survey commissioned by the Authors Guild in 1981 found that the average income of writers (not necessarily members of the organizations) was less than $5,000 annually, from writing projects.

[4] It has not been uncommon for this writer to receive telephone calls or letters from students who have graduated and are working on writing projects. One letter, for example, from a student who had returned to her native Bermuda after graduation and was working on a local television station as an "anchor," asked how she should handle setting a fee schedule for a series of articles she was planning to write for a Caribbean magazine.

REMEDIAL COMMUNICATION INSTRUCTION: WHAT AND WHAT FOR?

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Communication competence "refers to a person's knowledge of how to use language appropriately in all kinds of communication situations."[1] It seems to be dependent upon four factors:

1. A repertoire of experience. No one can ever do something really well if he or she has never done it before.
2. A repertoire of coping strategies. The person who knows only one way to do a thing is not going to be as competent as the person who knows several ways and can choose which one will work best.
3. Implementing skills. Even if you know what to do, you must also know how to do it.
4. Objective criteria for knowing whether or not you are doing something well.[2]

Communication competence, then, seems to have very little to do with intelligence or aptitude as indicated by the usual assessment measures, but has a great deal to do with the communication expectancies of the receiver. If, at college entrance test time, the student performs as expected, she or he is viewed to be competent. If not, the student may be assigned to some form of remedial skills training. As Ralph Jenkins, director of Temple University's massive remedial program in communcation points out, "Students are placed in remedial language courses because of an interaction between the individual student and the educational organization; the student's linguistic performance fails to meet the organization's expectations."[3]

There is a sense in which such tests do seem to function as valid discriminators between students who can and students who cannot handle classroom communication tasks effectively. However, given remedial training, individual instruction, reduced course loads, and extra time to complete the required number of academic courses, many students originally placed in remedial courses master enough competency in the desired skills to succeed in graduating from the university. Francis J. Sullivan, Director of Research for Temple University's Writing Program, suggests that the students placed in remedial instruction are "unfamiliar with academic uses of language, [and] use language in ways that are negatively valued in the academic community."[4] They have not developed the specific level of communication competency that the professor expects in the classroom. They have to be taught how to do what is called for.

It is the purpose of this paper to synthesize the results of a series of research projects, three already completed and one underway, to demonstrate that

1. Faculty expectancies for the communication competency of their students can be defined.
2. Student perceptions of the communication competencies needed for classroom success are not necessarily the same as faculty perceptions.
3. One aspect of any sensible pedagogical design or strategy for remediation must be the shaping of student perspectives to meet the expectations of faculty.

During the spring term of 1977 and during the 1977-78 academic year, two research projects were carried out at Temple University.[5] One study used trained participant observers to develop data concerning identifiable instances in which teachers asked students to use a definable communication skill in a way that might affect grades, yet did not attempt to teach that required skill. The second study used a three-phase questionnaire designed to determine what faculty members would consciously identify as the critical communication skills students should possess in order to function adequately in their classrooms.

The field study identified 45 speaking, listening, reading, and writing skills; by coincidence, 45 specific skills (not the same) were also identified by the faculty members completing all three phases of the questionnaire study. Content analysis of the two lists reduced them to a single list of forty items. From these forty items, the following four broad areas were defined:

1. Skills related to comprehending and being able to respond to instructions.

   The student should be able to

   A. Follow written or oral instructions accurately.

   B. Read and comprehend textbook materials, exam questions, written problems, class assignment handouts; read with concentration.

   C. Read teacher's corrections, and demonstrate responsibility for applying them with an eye to improvement.

2. Skills related to notetaking, whether from spoken or written material.

   The student should be able to

   A. Relate lecture information or information in reading material to other knowledge; remember earlier definitions, instructions, concepts; remember what was read or studied in some detail; note inconsistencies, contradictions, omissions--of logic or fact--whether within a lecture, between lectures, or between the lecture content and the readings.

   B. Recognize what is not understood in lectures or in readings and ask questions for clarification; know when to reread, study, or review; know how to use a dictionary, indices, glossaries, bibliographies, footnotes, appendices, etc.; use basic library reference sources.

C. Distinguish between key ideas and details; follow the flow of logic that is used to establish an abstract point; read or listen critically, distinguishing opinion from fact, main ideas from secondary ones and from illustrative material; distinguish conflicting sides of an argument; determine the bias or point of view of an author or lecturer, be prepared to dissent from presented opinion for good reason.

D. Take accurate, concise, useful notes on both oral and written material; paraphrase, synopsize, abstract, summarize.

3. Skills related to classroom discussion, and to the asking and answering of questions--both orally and in writing.

The student should be able to

A. Answer oral questions in class, or answer study questions or exam questions in writing, in ways that are precise, specific, pertinent, complete.

B. Ask and answer questions based upon course content, lectures, or readings, in a clear, understandable form.

C. Keep to the point in discussion; listen to other students and relate to them in discussion; express critical evaluations of others' ideas; summarize key ideas in a discussion; raise key issues and pertinent questions designed to move things along.

D. Speak at a rate and loudness level that permits easy classroom understandability.

4. Skills related to the presentation of oral and written reports.

The student should be able to

A. Formulate a thesis when reporting, whether orally or in writing; use a logical progression of thought (beginning, middle, end).

B. Prove, demonstrate, or otherwise establish that thesis on the basis of evidence and reasoning; demonstrate library research skills; use evidence, illustrations, examples, quotations, statistics appropriately.

C. Define key terms or concepts, write or speak coherently.

D. Use an adequate, effective vocabulary; write or speak simply, concisely, clearly.

E. Write grammatically; spell correctly.

The presumption of this research is that deficiencies in these areas could be expected to inhibit or even negate the possibility of classroom success. Students who enter the university at skills levels seriously below those predicted for them by their instructors will by definition have difficulty performing expected classroom communication tasks with anything more than marginal success. These students must catch up in the development of these abilities, or a large percentage of them will fail. If they are to catch up, they must progress at a faster than normal rate with respect to learning the things that are expected of them by their teachers but which they do not already know. Since these skills are expectancies, they are not for the most part addressed in the regular classroom instructional program. Therefore it is not reasonable to expect regular classroom programs to produce such learning--especially at a faster than normal rate. Remedial programs are therefore essential for some students.

The implications of the field study research, however, add three important dimensions to these conclusions. First, the classroom communication competency expectations of college professors are not going to be met by remedial coursework that focuses on correctness. Far more important are such general considerations as fluency and structure. Second, remedial instruction designed to meet the classroom communication competency expectations of college professors must be task oriented. The professors observed were not asking students for writing about personal experiences but for specific technical writing, research skills, and study skills. Finally, the concept of appropriateness--a key criterion in the judgment of competency--must be a criterion in remedial instruction also. Nontraditional students not only need to be trained to implement their listening, speaking, reading and writing skills; they also need to learn more clearly the norms and rules that apply to the classroom task. Merely working with standard grammar, pronunciation, syntax, and the mechanics of organizational structure does not teach the students to know how to use language appropriately in the classroom. Traditional methods of remedial instruction are simply not appropriate nor productive.

Sullivan's data as well as those from our own field study seem to emphasize the transactional nature of classroom communication. So long as actual criteria for effectiveness are unstated or unknown, the only ones who can succeed are the traditionally oriented students who have been acculturated to the norms and rules. Even when such criteria are stated, nontraditional students need careful training if those criteria are to be internalized and applied effectively.

In order to assess whether or not there was indeed a difference between faculty and student perceptions of communication competencies needed for successful classroom performance, additional research was undertaken in the spring of 1982.[6] Dr. Charles V. Roberts, then at Central College (Iowa), took our list of forty items and asked faculty members teaching courses identified as communication emphasis courses: Do you expect this of your students? Do you teach this skill? Do you consider it irrelevant? He then took the same list and asked students in these courses, item by item, whether or not a given skill was expected in a given class, whether or not the professor did indeed work with them on that skill in class, or whether or not the item seemed irrelevant.

Comparisons between the faculty and student lists revealed significant differences in expectations.[7]

So, even if we identify faculty expectancies and try to teach for them in remedial classes, and even if we somehow persuade faculty across the curriculum to teach communication skills rather than merely expect them we still have not solved the problem of students' lack of awareness of faculty expectations. A classroom is a culture, and cultural norms must be known and followed if one is to "belong." Certain behaviors are perceived by the professor as operative classroom norms, but his or her students may not perceive these same norms as relevant. When there is agreement, the student does well and the professor feels that the student has been appropriately placed. When there is disagreement, however, even though the student may put in hours of hard work, there is little payoff in grades. Such a student is viewed as incompetent or marginal. Traditional students tend to be communicatively competent within the demands of the classroom culture almost by definition, while the communication competence of nontraditional students is not useful in satisfying the professor's expectancies. Such students do not know how to use language appropriately in this particular variety of experience--the classroom. They need to be taught to recognize what is expected, what the criteria of excellence actually are, and when and how skills relevant to those criteria should be applied. The point, as argued forcefully years ago by James Moffett, is to make overt the covert aspects of task mastery.[8]

To be admitted to Temple University, students must have placed in the upper 50% of their high school graduating classes. Nevertheless, some 47% of each year's entering students test into remedial courses in reading and writing. In our particular phase of the program, we take the 125 students each year who score lowest on the university's English Placement Examination and in the free writing sample evaluation. For these students we have devised a specialized remedial course designed to test our ideas that

1. Remedial communication skills should be taught in such a way as to improve the classroom effectiveness of the student.
2. Faculty expectancies must be translated into teaching/learning modules and these must then be taught for an acceptable level of student mastery.
3. Students must learn not only the needed implementing skills but must also learn to recognize when these skills are called for.[9]

Students continue in the course until their general competency in the prescribed tasks is sufficient to make it sensible for them to move into a remedial writing course stressing composition skills and mechanics, no matter how many semesters are required. And students receive no university credit for any of these remedial courses.

The basic tasks which are the focus of the coursework are those derived from our 1977-78 studies (see pages 3-5 above). All instruction and teaching strategies are carefully oriented to classroom tasks because students must learn more than just skills. The instructional methodology is based on Moffett's approach, using a format that includes two essential features:

1. The integration of communication skills: reading in order to talk, listening in order to write, writing in order to read aloud, talking in order to write, etc.
2. The fading out of cues in order to make the covert become overt to the learner: for example, listen to a recorded lecture and follow an outline; listen to a recorded lecture and fill in an incomplete outline; listen to a recorded lecture and outline its main ideas.

We now have five terms of experience with our basic instructional model. Our student pass-out rate at the end of one semester of instruction has increased from 52.7% in 1970-71 to 62% in 1982-84. A final report is not yet in order, but we think we are on the right track. Students in need of remediation with regard to communication skills need to be taught to meet the specific communication competencies expected in the classroom culture. Generally they do not know these expectancies, and even when the related skills are in place, such students often do not know how to decontextualize or elaborate their communication sufficiently to succeed with classroom tasks. We are working with apparent success to demystify that process.

NOTES

[1] Barbara S. Wood and others, *Developing Communicative Competence in Children: Grades 7-12* (Annandale, VA: Speech Communication Association and ERIC Clearinghouse in Reading and the Communication Skills, 1977). This definition reflects the work reported by Kevin Connolly and Jerome Bruner in *The Growth of Competence* (New York: Academic Press, 1974). It is also in line with the concerns of James C. McCroskey, in "Communication Competence and Performance: A Research and Pedagogical Perspective," *Communication Education*, 31:1 (January 1982), 1-8; McCroskey holds that communication competence and communication performance skills do not necessarily predict each other.

[2] Donald H. Ecroyd, "Teaching for Communication Competence," in *Teaching for Literacy*, ed. Frances Davis and Robert Parker (New York: Agathon Press, 1978).

[3] Ralph E. Jenkins, "Remedial Language Programs as Systems," Fifth International Conference in Culture and Communication, Philadelphia, PA, March 1983.

[4] Francis J. Sullivan, "Remedial Writers: Cognition vs. Culture," Fifth International Conference on Culture and Communication, Philadelphia, PA, March

1983. See also Ralph Jenkins, Leo Rigsby, and Francis J. Sullivan, "How Does ELECT Affect Students' Progress toward Graduation?" ELECT Research Report #1, available from Ralph Jenkins, Director, ELECT Program, Temple University, Philadelphia, PA 19122.

[5] Donald H. Ecroyd and Judith Goldhammer, "A Survey of Faculty Expectations for Communication Competence in College Students," Third International Conference in Communication and Culture, Philadelphia, PA, March 1979; Donald H. Ecroyd and Judith Goldhammer, "A Field Study of Communication Competency Expectations of Certain College Faculty Members for Their Students," International Communication Association Convention, Minneapolis, MN, May 1981.

[6] Reported briefly in Charles V. Roberts and Donald H. Ecroyd, "Establishing an Institution-wide Program for Teaching Communication Area Courses," Speech Communication Association Convention, Louisville, KY, November 1982. For a full report on Central College's experience with the Communication Across the Curriculum program, see Charles V. Roberts, "Speaking and Listening Education across the Curriculum," in Improving Speaking and Listening, ed. Rebecca B. Rubin (San Francisco: Jossey-Bass, 1983).

[7] The full report of the questionnaire results is available from Dr. Roberts, Professor and Chairman, Department of Speech, McNeese State University, Lake Charles, LA 70609.

[8] James Moffett, Teaching the Universe of Discourse (Boston: Houghton-Mifflin, 1968).

[9] The present curriculum is based on a design prepared by Professor Adele Gerber of the Temple University Department of Speech, which has been adapted under her direction. Copies of the current version are available from Donald H. Ecroyd, ELECT-Speech Coordinator, Department of Speech, Temple University, Philadelphia, PA 19122.

A Sense of the Commercial as a Substitute for Term Papers

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At no time has there been a greater impetus to stress the importance of writing skills among college students and insure their prominence across the curriculum. At the outset, this is not so much a question of whether we have done well or are doing better as it is of whether we are meeting the increasing demands and unparalleled opportunities of the times in the midst of a changing society.

Among the numerous reports and studies depicting the shortcomings of education, perhaps the most telling was the findings and recommendations of the 1983 study on education by the Carnegie Foundation for the Advancement of Teaching. Among other things, the study found that writing is the most important and neglected skill in the school and went on to suggest that writing should be taught in every class. It is clear, at least from the findings of the Carnegie study, that the importance and value of writing skills cannot be left to chance. Also, it bears repeating, for a proper perspective, that writing proficiency must be understood within the context of an extraordinarily complex, information-seeking/generating society, which has become technologically dependent on print information and other forms of sophisticated communication. Hence, with the changing nature of the work place and the increasing demands for skill and knowledge, the objective evidence is persuasive that we equip young people with usable information skills, thus insuring full participation in one of the most exciting eras in history with a sense of purpose in relation to it. Given the constraints of a brief paper, it is impossible to do more than scratch the surface of this important subject. We shall therefore restrict ourselves to a report on our efforts in developing an upliftingly educative approach for maximizing college students' analytical and expository skills by encouraging them to write scholarly articles for professional journals.

Genesis of the Project

Since 1975, when we first began emphasizing quality in writing, our teaching strategy was centered on the recognition that today's students represent the future of their respective disciplines and that what happens in the classroom affects the future. Since the college's mission is teaching, anyone who works with ideas (and certainly this is what we are preparing students for) must, of necessity, be proficient in the skills of writing, if the nurturing of ideas is ultimately to have substance, value and meaning.

Our efforts evolved from a recognition that students often saw little purpose and no personal satisfaction in term papers, nor did they understand that writing is a marketable item in itself in an age of information. We decided on a curriculum innovation that would enable students to comprehend, absorb, and internalize a higher meaning for writing skills by making writing of serious quality a singular learning outcome they could appreciate as meaningful and purposeful in the context of their educational experience, career preparation, and future job placement. The underlying point to be made was that the portability of writing was no less important an area to comprehend than computer programming, law or social work.

This approach raised an interesting question on how best to make our point. To plan an effective innovation, we obviously needed the very best rationale for the task. The upshot of all this was a straightforward, uncomplicated approach to the problem which seemed logically sound to us. We made the assumption that the writing potentials of students could be actualized if we linked such efforts to the notion that: (1) contributing to the extant literature from which one has received his/her early training is a professional obligation and responsibility, and that (2) since every professional person should at some future point in their career have something important to say about their work experience or practice, cultivating this attitude through fostering of writing skills should be a teaching goal in graduate school.

In conceptualizing the problem, the emphasis on the portability of writing skills was viewed as neither separate nor removed from basic curriculum goals or objectives in the educational process. And this notion of interrelationships was crucial to blur any differences. In any event, college preparation for one's chosen vocation ought to include a heightened sense of indebtedness to past contributors to the body of knowledge and its shared values, beliefs, and practices that have shaped and formed one's training. Indeed, this inextricable connection between one's vocation and those who have made it possible provides the measure of recognition of future obligations and responsibility to repay this "debt."

Our program was successful, in part, because the project was an option in recognition of the fact that most of them were not at that moment in possession of the requisite skills for publication. At the same time, we offered the proposition that students are capable of writing good, short and simple declarative sentences expressing an idea. Our focus was on this potential that was to be exploited with analytical, critical and imaginative thinking. Originality was stressed as the paper would be representative of the students' ability to think through ideas and conceptualize them in a coherent frame of reference, thereby capturing juried attention.

Writing Something New

Serious writing, we would caution our students, is always preceded by study of previously published material, in order to know if what one has to say is truly informative and worthy of inclusion in the existing body of literature. Since the object of an article was to inform, students should know what others before them have said about the same subject, that to ignore past contributions is to impair the scholarship of their findings. To have meaning in the framework within which anything not yet known will come to be known, we caution the students on something we once read: "When a person says, I know what I mean, but can't express it. The individual most likely does not know what he/she means." Obviously, the individual still has some thinking to do with respect to fitting his/her meanings into an understandable framework.

These considerations imply that like those before them who have shaped themselves in accordance with these views, maximal success and satisfaction is most likely to occur when one shares with colleagues those experiences of their discipline at work which are relevant or potentially relevant to the existing stock of knowledge.

Significance of Writing Skills

It is possible to imagine the decline or loss in stature, prestige and credibility of a discipline in the absence of phenomenonological reporting evolving out of the dynamic setting of the work place with its relevance to the existing stock of knowledge. There is then, a safe assumption to make in preparation for a career, and this assumption is that if students fail to apprehend the requisite significance of writing skills, they will be sorely handicapped in achieving significance and actuality because of failure (or is it the professor who has failed) to recognize that as prospective members of a learned profession or specialized field, they will have a stake in and a responsibility to question, challenge and contribute to the already discovered body of knowledge. Clearly then, at least in our view, every professional or career-minded individual should at some juncture in time have something of importance to share with colleagues evolving out of their field of practice, and this idea needs to be internalized in the objective reality of one's schooling. What was essential for the internalization of this crucial point was our conviction, which we shared with the students, that development of writing skills and the mental processes involved therein was one of the most important measurable outcomes of their college preparation.

What students learned as an objective truth in the course of skill development was that as they put their thoughts and ideas together using short, simple declarative sentences, they were able to clarify and synthesize their own ideas and for some individuals this was an excellent "recipe" for the organization of subject matter. It follows then that a theoretical integration, which requires considerable intellectual fortitude in itself, is required for reflection on the objectivated world.

In terms of the individual's future work experience as he/she reflects on the successive moments of the unfolding experience, this training will enable them to fit their meanings into a useful theoretical framework. We should note as an aside, that the construction of this "project" made possible a division of labor in the cognitive domain thereby opening the way for innovations, which demanded a higher level of attention. For one thing it made students aware that in the external world, written reports will be judged primarily on content, that is, on the quality of the information and ideas expressed; that careful organization and clear, concise expressions of that content are essential if the intended reader is to conceptually grasp the full meaning. What is more, we stressed the mental processes on which written expressions of ideas depend including the following:

(1) Generalizations: finding the common theme or thread that weaves specific examples or instances to each other, abstracting,

(2) inferences: drawing out meanings that are implied but not stated explicitly, reading between the lines,

(3) analysis: examining parts of the whole, such as causes, effects and processes,

(4) synthesis: developing ideas or meanings into new relationships; creating, organizing the parts of the paper,

(5) evaluation: making judgements about the paper according to criteria.

As we live in an age of information, computers and ultra high technology which becomes real in an ever more massive way for the prospective graduate, being marketable and successful in a print environment requires students to undergo the rigors of serious writing. Since they had no part in shaping this world, it confronts them as a given reality which they must prepare for, and this includes

(1) developing the capacity to apply to new context the knowledge gained from classroom learning, readings, life experiences and library research,

(2) developing the ability to draw conclusions, as opposed to simply restating or "regurgitating" the works of others,

(3) being capable of stating a thesis clearly and supporting same with reasoning and documentation,

(4) having the capability to organize a paper in an orderly sequence, governed by a controlling purpose that is clear to the writer, with paragraphs and subsections containing

their own internal organization, and

(5) adapting what one writes to the interest, needs and expectations of the intended audience, whether it is one's peers, scholars in the discipline or the general public.

Operational Mechanics

We were convinced students need to be inspired or should we say nudged to write seriously, to feel motivated and have the confidence that allows all the rest to happen. Operationally, we made plain our views that knowledge of the writing process, knowing how to use strategies at various stages of writing for producing a mature and publishable piece of writing is the centerpiece of the students' unfolding experience that is transferable along with the rest to the occupational world. Moreover, from the point of view of teaching effectiveness, we viewed published material as learning outcomes attesting to significant indices of teacher effectiveness. As can be expected, students will resist if not dismiss the challenge of writing for publication. Thus, to minimize or disarm their resistance, the following confidence-building measures were employed:

1. Discussions were held with the students on their emerging professional/occupational status and the obligations they will assume in contributing to the literature of their respective discipline. It was made clear that what is "real" outside the classroom includes the responsibility all members of a given discipline assume, for only as the existing body of knowledge undergoes constant review and revision, as new ideas and information emerge from the field, can the discipline grow in stature, prestige and importance.

2. On a more fundamental level, the advantages of serious writing were discussed in great detail. We noted, for example, the immense pride in seeing one's work published in referred journals alongside those of well-known scholars; the prestige and status accruing therefrom; its value factor in enhancing one's resume; and the importance of published work as concrete evidence of one's ability to pursue doctoral studies. (Several of our writer-students have gone on to earn doctorates, two of whom are now employed in higher education). Lastly, we stressed the theme of serious writing as a significant measure of professional leadership.
3. We recognize resistance can be a depositary of a large aggregate of collective habits having their origin in the "not too exciting" chore of writing traditional term papers on topics or themes assigned by the instructor. Thus for the timid, unsure student, confidence-building measures included encouraging students to "test the waters" by composing short pieces for the OP-page of their local newspaper or writing a letter to the editor of a news journal (e.g. Time, Newsweek, U.S. News and World Report, etc.) offering them comments, critique or views in response to a feature story or news article. This approach had a two-fold purpose:
    1. As a result of publication of the "article," the student would experience increased self-confidence for the ensuing demands of a larger, more substantive paper, and be better able to cope with the rigors of serious writing, and

    2. the student was encouraged to use the published statement as the nucleus for a more developed paper with the usual references, footnotes and bibliography. Not surprisingly, several students have found this prescription helpful, perhaps because it enabled them to sharpen their understanding of short, concise articles that communicated ideas. As a tool it was most effective.

4. In order to insure the portability of the experience, we allowed the students a wide latitude in topic selection including topics not directly related to course content. Factors such as students' age, maturity, years of experience, discipline (our students represented various disciplines, e.g., education, psychology, nursing, etc.) and topic interest had to be considered, given the heterogenity of the students and the unusual requirements imposed on them. In general, we sought to strike a dynamically important note of inquisitiveness by calling to students' attention (especially those with years of professional experience) the yet unsolved problems in their field, encouraging them to re-examine the fundamental tenets of their discipline. In this connection, the clinical importance of this approach was that it made more palpable our assertion that as professionals already "toiling in the vineyards" there is much to be harvested from their immediate work processes in conceptual, methodological and theoretical issues. As we have seen, this strategy or approach helped to facilitate the breakdown of powerful anxieties and/or frozen attitudes. More importantly, it

helped to persuade those students wavering in their choice between a term paper or a more substantive paper for publication.

Writing for Publication

The specificity of the project was quite straightforward in that students were instructed to write essay-type articles and not research-focused papers, which we deemed too time-consuming and probably outside the individual's sphere of expertise. More generally was our introduction to the juried/review process, the editorial requirements of a particular journal and the appropriate information for the cover letter. The need to forewarn the students on possible rejection was also recognized and the psychological let down ensuing therefrom was tempered by the observation that the best of authors have experienced editorial rejection and when one considers helpful editorial comments and suggestion, it was not so much a rejection as it was an objective lesson in writing. Finally, to insure a "reality-orientation" to the effort given the writing capabilities of the students, they were informed their paper would be graded as a term paper assignment.

Conclusion and Summary

The effort to raise college students' writing to the level of competency was in large part a function of the innovative process permeating the classroom experience. It is fair to suggest, given the usual student anxieties associated with course work, these feelings were minimal since the individual has a choice: he/she settles for one "anxiety" in order to avoid the other. The province of meaning [of writing] that would otherwise remain unintelligible enclaves within the reality of one's education became intelligible and less terrifying as judged from student published papers in such diverse journals as Adult Leadership, Journal of International Association of Pupil Personnel Workers, Today's Education, *The Clearing House*, *Counseling and Values*, *The Guidance Clinic*, *Cimmaron Review*, *The Independent School Bulletin*, *Adult Education*, *Teacher Paper*, *School Board Notes* (New Jersey School Board Association), *Journal of Business* and *NJEA Review*.

In our assessment program outcomes, it appears from the variety of journals and issues discussed the correctness of the strategy permitting wide latitude in subject choice, and student evaluations at semesters' end indicated a positive experience. Within the same context, one other positive outcome which has enormous ramification for future course work was students' new found respect for published articles. Not only have they "learned" to write and in the process raised their self-confidence, they also learned that to write is learning to think. Thus, it was not surprising the affirmation of students to continue writing for publication in other classes in lieu of term papers, and this was true even for those students whose papers were not accepted for publication. We need not belabor the obvious point that this teaching approach may have the potential for a new model in student learning outcomes. For it can be seen that student publications as a measure of cognitive experiences and written expression, is an attractive alternative to the traditional, teacher-sponsored term paper. And finally, we have seen how meaningful integration of discrete elements of education and the work place actualize to legitimate learning behavior, priorities and operating procedures by placing the experience in a context associated with one's discipline and future employment.

A NEUROLOGICAL AND COGNITIVE BASIS FOR THE GREATER EFFECTIVENESS OF TECHNICAL WRITING IN FRESHMAN COMPOSITION CLASSES

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The study of twelve sections of required freshman composition courses over a two-year period found that students taught writing using technical writing style and concepts as the instructional basis became less fearful of instruction in writing than students taught literary-essay or rhetorically-based writing. The study further found technical writing was over 200% more effective than other teaching approaches in breaking down student resistance to learning to write caused by writing anxiety, while leading to greater improvement in task-specific skills in writing.[1]

The fear of writing has been shown to be a very strong factor causing students to reject instruction in composition and keeping them from learning to write well.[2] Psychological tests and a modified Gear Fear Survey[3] indicated that freshman composition students only feared death or injury to a loved one, or public humiliation more than having to write a paper. Writing seems to combine fear of injury as teachers cut up the papers, and fear of public humiliation since the communication is to an outside audience. This anxiety leads students to feel the less time spent on writing, the less severe the exposure to an anxiety-producing stimulus.[4]

Technical writing concepts and style helped students overcome writing anxiety and led to enthusiastic learning. Students taught technical writing in the composition courses were also able to learn more material with greater effectiveness in less time than the students taught through the other instructional modes. For example, it was found that students learned spelling rules in 40% less time in the technical writing courses than in the others, and with 5% increase in scoring on tests.

In the study, two basic modes of teaching were used; literary-essay/rhetorical approach and a technical writing style concept, so defined below.

Literary-essay - Definition

> Literary-essay styled teaching was defined as proceeding from the basic assumption that by reading, studying, and practicing models, either sentences or essays; modes of discourse; and rhetorical devices and conventions, students will learn and master writing.
>
> The student is prodded to learn to write both formal and informal essays with the topic sentence, basic introduction, development of the body, concluding paragraph style. Further, the use of language is associative and personal, employing connotative and metaphoric relationships of words and thoughts to develop concepts and themes.
>
> Wit, grace and style are prized since the purpose of the essay is to please and edify the reader. The audience is undefined, but considered to be an unknown critic who will judge the writing on its literary merit and use of diction to fit the idea and personality of the writer. The primary goal of such writing is not the clear, logical sequential presentation of information, even though these are qualities appreciated by the reader. The literary essay is a personal, subjective communication between author and reader which prizes the formation of a relationship between the two as a primary objective in the writing.

Technical Writing Style - Definition

> Technical writing was considered to be that style which has a clear, direct, sequential presentation of information to a specific audience as its goal. It has been drawn from areas of occupation in which scientific methods of procedure design a tightly logical structure which is necessary to the subject and reader. The writer is objective and places greater emphasis on subject and audience rather than audience and self as in the literary essay. Further, the goal of the writer is to produce a piece of writing which defines the subject within narrow limits of denotation. The technical writer strives to provide information for ideas that are not to be interpreted, but to convey one

> meaning or sense effectively and clearly. The reader is to have but a very limited range of interpretation, if any at all.
>
> Differences of literary essay style and technical writing style can be seen in the sentence structure. The literary essay prizes inventiveness and complexity in sentences which cause a reader to note the individuality of the writer. Complex and inverted sentences are hallmarks of the literary essay. Technical writing moves to a more streamlined sentence pattern based upon subject-verb-object or subject-verb-complement structures. Simplicity and directness are prized since the goal is to provide information on a subject and not on the writer.[5]

It must be added at this point that the definitions did not in themselves represent a bias for or against one form of instruction or the other. If there was any bias when this study began, it was for expectations that the literary-essay approach would prove more effective than the technical writing, since my original training had been in the literary essay/rhetorical mode.

Rationale of Approach

The study proceeded from the recognition that anxiety beyond the point of positive motivation interferes with learning.[6] Writing-anxious students cannot enter into the study of writing freely and, therefore, find themselves in a self-fulfilling prophesy stated simply as "I become too anxious from fear of failure so I can't learn to write well, therefore, I will fail." If anxiety could be reduced, students would be able to approach writing more freely and with a more positive attitude that could lead to learning to write well. The study, therefore, sought to gauge student anxiety reactions in reference to the two instructional modes.

Instructional Procedure

Two 14-week curricula were created for students who were arbitrarily placed into three freshman writing sections by the college's scheduling office. One curriculum was based on literary-essay-styled instruction. The other curriculum used technical writing materials. Students met with the instructor three times a week in a fourteen-week semester.

The courses all had the same goal of increasing student writing ability and proficiency. Since the students needed work in areas such as sentence structure, punctuation, spelling and capitalization, both classes began with a grammar review, so they started in the same area. The next part of work was in sentence structure, which initiated the differences in instructional approaches. The essay section worked toward inventiveness and personality; the technical writing sections toward standardized sentences where content dictates form. For example, Mitchell writes in his Handbook of Technical Communication:

> A writer making an unqualified observation should use a simple sentence . . . A writer expressing ideas subordinate to the main clause should use a complex sentence.[7]

Each section was required to write one paper per week. Whenever possible, the written assignments were of similar types or topics. For instance, when one class was required to write a description, the other would also write a description.

All classes were taught in a lecture, discussion, application format. The subject for the class would be presented, followed by a discussion of central points with appropriate examples and illustrations to ascertain if the students understood the information and concepts. Then the students would be given assignments which would apply the material. The next class would begin by reviewing the written work prior to starting on a new or expanded topic or study area.

Anxiety Testing Results

Anxiety levels were checked after four weeks of instruction, after eight weeks of instruction, and just prior to the end of the course in the thirteenth week after three months of instruction. The testing was done by having the students in all three sections fill out a Gear Fear Survey in which the stimuli had been rearranged to prevent students from becoming familiar with the pattern of stimuli for response. The results of anxiety testing in the first group of students over the full semester are shown in Table 1 for purposes of explanation.

Table 1. Results of Anxiety Testing, Group 1-2 Tech., 1 lit.

	Technical		Technical		Lit Essay		
After 1 Month	4.05		3.94		4.49		Average Response To Stimulus
	A -.53		A -.64		A -.09		
After 2 Months	3.28		2.97		4.01		Average Response To Stimulus
	A -.77	B -1.30	A -.97	B -1.61	A -.48	B -.57	
After 3 Months	2.22		2.16		3.42		Average Response To Stimulus
	A -1.06	B -2.36	A -.81	B -2.42	A -.49	B -.96	
Total Average Decline		2.39				.96	

A = Decline from last previous testing
B = Overall decline from start

4.58 starting anxiety level for all sections to "writing for grade" stimulus

The average overall level of anxiety caused by the "writing for grade" stimulus was 4.58 at the start of the semester. The two sections taught technical writing style showed a decrease in anxiety of over two full levels from 4.58 ("fear") to 2.22 ("little fear"); while the literary essay styled course dropped one level from 4.58 to 3.42 ("some fear").

Following the first testing group's results, the teaching modes during a semester were switched about into various combinations such as two literary essay sections with one technical; all literary essay; all technical. The attempt was to lessen bias caused by repetition in a semester or by subconscious favoring of one over another instructional mode during a semester.

When the average final results for all the technical writing and literary essay groups were totalled and averaged, the technical writing-based groups showed a superiority in reducing student anxiety toward writing. (Table 2) The technical writing groups had an average reduction of 2.30 levels of anxiety from the beginning of the semesters to the end. The average reduction in anxiety for the literary-essay-based groups was 0.98, less than half that of the technical writing sections.

		Tech Style	Lit Essay
Test Group	1	2 39	96
	2	2 27	995
	3	—	98
	4	2 25	99
Overall Averages		2 30	98

Table 2. Average Total Anxiety Reductions by Instructional Mode

Discussion of Possible Causes for Anxiety-Reduction

Possible causes for the greater effectiveness of technical writing-based instruction lie in four areas. There is a current positive bias toward technical or "real world" writing, i.e., writing called for an used in the world outside of the college classroom. As a result of this cultural bias and present employment situation, students are now more goal-oriented and might accept technical writing instruction as coursework which does fit into their future plans. This would generate a greater receptivity.

There is a novelty factor possible. The students had generally been taught composition through grammar, a rhetorical approach, or the literary-essay, so the technical writing approach may just have been different enough to not call out anxiety-producing stimuli. The very newness of the material could have awakened an interest in the new approach for the students.

The investigation led to some interesting conclusions about the brain's hemispheric functions and specializations which could also account for the superior results achieved through technical writing in the research. The very structure of the neo-cortex of our brains may generate a proclivity toward the learning and use of technical writing style and concepts as a primary basis for written communication.

Hemispheric structures have led to specialization in the brain. The left hemisphere controls and processes speech and language; forms linguistic propositions; and works in a logical, sequential and analytical mode. The right hemisphere functions in a more intuitive mode, forming associative patterns from visuo/spatial and tonal appreciations. The left hemisphere is also the dominant half of the brain since it controls the learning of language as well as the production of propositions.[8] Studies indicate the learning of language and its control may well be primarily left-brained activities.[9]

Technical writing style is a logical, sequential and analytical use of language so it most closely matches the way the dominant left hemisphere processes languages. The associative, imagistic, connotative use of language in the literary-essay style for instance, may be more aligned with right brain functioning. Technical style and writing could be more attuned to the primary way the brain accepts and uses language, therefore technical writing style would be more immediate to the brain as it processes and uses language thereby generating a greater receptivity to technical writing instruction than other modes for students.

There is another possible source for suggesting that technical writing style may well be culturally induced. There are at least two cognitive learning patterns which point to the correctness of technical writing as the most appropriate form in which to learn to write and use language.

The two patterns are explained by the learning theory, Law of Primacy, which covers first learning and acquisition of materials, and the Law of Recency, which as its name implies, refers to things which a person acquires and learns most recently in a temporal scheme of things.

The Law of Primacy states "that which is learned earliest, primary acquisition and learning, is most strongly retained and recalled" while Recency states "that which is learned or acquired most recently is most immediate to recall." The important distinction here is strength or depth of retention versus quickness of response. The quickest response is not always the best. We need also make a simple reference here between long and short-term memory processes which also seem to work on a strength versus quickness of response process.

When a person learns a language, acquires the syntax, vocabulary, deep structures and such, that person begins by doing two things. One, cognitive structures and processes develop which allow for the templating of language into culturally recognizable and usable patterns such as syntax. The other is a more perceivable surface process which is observed in children using language holistically; a simple word or sound covers an entire range of thought and generalized communication. The child calling out "Mommy" is making an entire statement, for example, as the noun, "Mommy", is generalized within a range of possible interpretations which take on specific meaning within the audience.

It is important to note that the first words to be generated are nouns. Nouns are most significant in early learning and will be most strongly recalled in the brain as it generates propositions and sentences which are little but the expansion on the holistic statement of a noun. We see and understand the world in objects, things, nouns and generate sentences around them.

The child next learns when and how to use verbs and their placement in syntax. This brings in the rudimentary syntactic structure of the basic American English sentence SUBJECT + VERB to which the object is added out of closure needs giving us the regular S+V+O. The verb and object are there to emphasize and complete the noun statement. Thus, the subject retains strength.

Primacy indicates that the basic S+V+O structure since it is first learned and used would have greatest strength. Further, the location of the subject as the primary statement in the sentence re-inforces its strength and precedence of structure in the use of language.

More complex structures like the passive, complex-convoluted structures which are hallmarks of the literary-essay style are learned later. In passive, the object is read by the brain as the subject since it has taken the primary, subject, position.

This sort of structure is learned late in the language acquisition and learning career of the individual. The later-learned information of the literary-essay structure is called out quickly by specific, limited stimuli such as the classroom or a specific audience, but it is called out weakly and is in direct competition with the stronger primary S+V+O. The two syntactic structures do a sort of cognitive competition of "quick to mind" versus "strong to mind" causing the classroom-induced form to come forward weakly and not in a mastered way. This leads to mental errors, poorly formed thoughts and convolutions of sentence structure which often mimic common error patterns found in people with neurologically-based language problems.[18]

Students do not learn the literary-essay style well. They may never quite master it and as a result, it causes them problems. It takes an effort for them to be able to use literary-essay style well because it is not naturally generated and learned late in language acquisition. The primary S+V+O, is a basic technical-styled sentence structure, and comes quickly to mind when re-introduced to students in a classroom such as in the study because it is readily recognized as the basic, primary syntax. The syntax is immediately available to students and strongly re-asserts itselt over the literary-essay style when students let down anxiety blocks caused by the weakly acquired, most recently enforced, literary structures.

Finally, the S+V+O technical style leads to greater acceptance since it was first learned and, therefore, strongest to the cognitive patterns needed to process language in our culture. It is also the syntax most natural to our culture's everyday speech patterns. The result of the strength of primacy of the technical syntax is greater acceptance by students and an enhanced feeling of familiarity with technical structure. Students can relax when writing sentences since they are working from strong cognitive structures. They also obtain a feeling of well-being from the ease at which the technical syntax asserts itself thereby giving them an added sense of surety in their ability to use language.

These cognitive processes and the primacy of technical syntax are thus an additional basis for why students were able to learn so much more readily and well with technical writing style at the base of instruction. I suggest that literary-essay-styled instruction with all its various forms is a weak way of teaching writing. It goes against basic cognitive patterns and may cause more troubles than it can solve.

NOTES

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AN INTERDISCIPLINARY APPROACH TO THE INTRODUCTORY WRITING EXPERIENCE FOR GIFTED STUDENTS

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INTRODUCTION

Most American colleges and universities today have a general writing requirement that must be completed by all degree-track students regardless of major. Whether known as "Critical Reading and Writing," "Freshman Composition," or by some other rubric, this course is usually a nuts and bolts one, in which the student learns the mechanics of putting words into sentences and sentences together into some coherent form in order to express ideas and arguments cogently. Because of the need to focus on the mechanics of writing, such a course is often considered to be soft in academic content and, for many students, fails to provide intellectual stimulation.

Often there are problems with this kind of course for students who enter college with high verbal abilities. Many would argue that these students should be exempt from any introductory writing requirement. Yet, while many students leave high school with a command of the mechanics of writing, these same students frequently are not effective writers and need the discipline of an introductory writing course to sharpen their compositional skills. To become more effective writers, they need the discipline of writing in a controlled environment, subject to careful analysis and criticism. Since these students do not need to spend time on mechanical skills, however, such a course can have considerable academic content.

The University of Delaware has responded to this need by providing a number of courses designed to introduce a high level of academic content into the introductory writing experience. The objective of such courses is not to teach the nuts and bolts of writing; we assume that a verbal SAT score of 580 or better indicates the students have those skills. Rather, these courses attempt to provide students with sufficient intellectual stimulation to inspire them to develop further their abilities as effective writers. Consequently, there is a great deal of experimental latitude in developing subject material for these courses.

One of these courses is an interdisciplinary one entitled "Biology and Literature: Views of Nature" [1]. The primary objective of the course is to provide students with sufficient material, techniques, and criticism to develop their writing skills into an effective and efficient form, but we have a number of subsidiary objectives as well. We try to teach introductory epistemology--how do we know what we know, and why? We try to teach some relevant history--how have our views on a given subject changed over the years? But, most importantly, as implied by the title, we try to teach the student how the scientist and the writer have influenced our views of the world around us. How have those views differed and how have they been similar? How have they influenced each other? What are the methods of each?

COURSE CONTENT AND OPERATION

Obviously there is considerable latitude in such a topic and we have developed a sequence based upon our interests and previous teaching experiences. A list of the works used in the course is given in Table I.

TABLE 1

LIST OF READINGS

Camus, Albert	The Plague
Crane, Stephen	"The Open Boat"
Darwin, Charles	The Voyage of the Beagle, Chapter 13
Darwin, C.	On the Origin of Species, Chapters 1-4, 6, 12, 14
Dawkins, Richard	The Selfish Gene
Emerson, Ralph Waldo	Nature
Harvey, William	Anatomical Studies on the Motion of the Heart and Blood
Marlowe, Christopher	The Tragedy of Doctor Faustus

Our present course begins in the seventeenth century with a mystical view of the world. Marlowe's Dr. Faustus [2] presents the student with a view of nature governed by magical forces. If one only knows the right incantantion, vast powers can be summoned up to do our bidding. We then compare this view with that of William Harvey, who, although younger, was Marlowe's contemporary. Harvey [3] describes a biological world governed by mechanical forces; he uses the language and metaphor of the physicist or engineer when he writes metaphorically of pumps, valves, and reservoirs operating in living systems. Furthermore, he supports his view by methods most literate people can understand. His arguments are compelling because an educated person could repeat his experiments and come to similar conclusions.

Herman Melville [4] and Charles Darwin [5] provide us with views of the same piece of real estate at approximately the same historical time. Yet each writer arrives at a different view of the significance of that geography. Both went to the Galapagos Islands at about the same time; both wrote accounts of their journey and their impressions of the islands. It would be difficult to find two works that better illustrate the theme of the course. In The Encantatas Melville describes a dark and static place, governed by evil and sinister forces. The islands and their inhabitants appear to Melville to have been produced by an evil enchanter and to have remained unchanged since their creation. However, in chapter 13 of The Voyage of the Beagle, Darwin views the islands with the detachment of the scientist, and comes to a conclusion opposed to that of Melville. He notes a profusion of creative forces in the islands. While he does not reject the special creation hypothesis that shaped his world view at the time, we can see the Galapagos Islands experience causing questions to be raised about the hypothesis. As Gottlieb [6] has noted, Melville went to the Galapagos in order to confirm a previously held view; Darwin went to observe and describe nature and to consider a possible alternative world view.

Themes of mechanism and spiritualism are elaborated further in the juxtaposition of Emerson's long essay *Nature* [7] with Darwin's *Origin of Species* [8]. Again, these two works present the student with starkly differing views of nature. Emerson perceived nature as an expression of transcendental reality. For Emerson nature represented a moral order. Darwin on the other hand, saw nature as essentially amoral. Nature is neither good nor evil. Nature is simply nature. While even Darwin may impose a moral or aesthetic dimension upon nature (as, for example, in the closing paragraph of *Origin*), that dimension is always a human creation. It does not exist within the fabric of nature itself.

Crane's *The Open Boat* [9] and Camus' *The Plague* [10] illustrate that the writer can use these ideas as well as the scientist. Adrift in the sea, the men in Crane's boat look to nature to find some reason for their torment, but they find none. The sea (nature) really does not care if they live or die. Similarly, the plague strikes indiscriminately in the town of Oran. The plague cares little for one's virtue or morality; it is simply a microbe existing in a universe governed by Darwinian selection.

In *The Selfish Gene* Richard Dawkins (11) develops an interesting speculation on the application of evolutionary concepts to human behavior and morality. Because of its highly speculative nature, this book provides an excellent case-study for examining the rules of evidence and the development of arguments, which is a major focus of the course.

Classroom sessions require students to offer their interpertations of the readings. Since a major emphasis of the course is to help students come to their own conclusions about the meaning of the texts, lecturing is minimal. Occasionally, lecturing is necessary to provide background material for a particular text. For example, it is difficult to understand the arguments presented in Harvey if one is not familiar with some of the tenets of the Galenic system. It has been our experience that background lecturing is more frequently necessary for scientific works than for literary ones. For example, background lecturing on the central dogma of modern biology is often required for the Dawkins book. This is a dimension which must be determined on an *ad hoc* basis for each class.

The writing requirements for the course are dictated by English department guidelines: students must complete a fixed number of writing assignments, at least one of which must be a major research paper. We make assignments that will develop various aspects of the course objectives. For example, upon completion of the Harvey and Marlowe works, the students are asked to write an imaginary conversation between Dr. Faustus and Dr. Harvey about the structure of nature. Other assignments require a comparison or contrast among the readings. The research paper must be a detailed elaboration on some thematic aspect of the course.

Both instructors read and criticize all of the writing assignments given in the course. Since most of these students have mastered the mechanics of writing, criticism generally involves elements of style, logic, and rhetoric. Our goal is to help the students to organize and express their ideas better rather than to parrot back a set of specific facts. As has been noted elsewhere [12], grading of these essays can sometimes be especially difficult for scientists, who are accustomed to critiquing essays which require, primarily, the assimilation and review of facts.

IMPACT

Because an introductory writing course is required of all entering freshmen students, this course draws students from across the university community. While we have attracted a significant number of students intending to major in biology, we have also taught students majoring in disciplines ranging from English to computer science and chemical engineering. In terms of student participation, the course is truly interdisciplinary. The one prevailing characteristic of all the students has been their generally high verbal facility.

Evaluations, completed at the end of each offering of the course, suggest that students benefit greatly by participation. Nonscience students frequently discover a dimension of science they had not previously realized, and many of the science students come away from the course with a new respect for the humanities.

Both kinds of students seem to understand the nature and limits of scientific knowledge. In addition, a number of students have crystallized career choices during the course.

The writing goals of the course are usually fulfilled, and most of our students indicate that the course has had a positive impact on their writing ability. The consenus seems to be that the course has been beneficial in sharpening students' facilities for critical reading and writing.

Despite the positive nature of such evaluation comments, they provide little justification for an interdisciplinary, team-teaching effort. Most of the above goals could be met just as easily and effectively in a more conventional course. The student evaluations, however, point to a more subtle and crucial value in our approach. Numerous students have pointed to the occasional disagreements that occurred between the two professors. For many students, this was the first time that they had experienced authorities revealing rational differences of opinion on a subject. These conflicts helped us to point to the fundamental differences in the way our disciplines shape our views of the world about us. This illustration of interdisciplinary thinking would have been impossible in a course taught by a single instructor.

CONCLUSIONS

C. P. Snow defined the two cultures in 1959 [13]. Many of us today like to believe that the two separate cultures of Snow's day no longer exist, that somehow the gulf has been bridged. But in reality, the gulf may have grown wider. Whether we are scientists or humanists, we frequently teach in isolation from each other. While we may physically exist in the same academic community, we operate in separate intellectual communities and by doing so, we convey to our students that our discipline provides the only valid way of learning about the world around us. We imply, for example, that science is unique from the rest of our culture and has all the answers to life's perplexing problems, if we can only find the proper technological "fix."

If this view was disturbing at the time Snow wrote The Two Cultures, it is even more so today in a world increasingly shaped by technology. Every scientific discipline has an impact upon society at large. The nuclear age generated by modern physics poses societal problems that go far beyond the control of nuclear weapons. Modern biology poses questions that go to the very depth of our understanding of human nature. Yet these sciences provide few answers to these questions. Indeed, they provide little methodology for even addressing the questions. Since these questions transcend science itself, to arrive at an answer we must go outside science. We must look at science in its societal and cultural contexts.

This in essence is what our course is all about. Through the reading material used and by our example, we try to demonstrate that there is no required gulf between the sciences and the humanities. The unstated objective underlying the entire course is to demonstrate that science and the humanities are not at odds with each other, that each can provide us with a description of the world about us and a means of validating that description. The course does not attempt to build a bridge across the gulf between two cultures, but rather it strives to show that there is no need for a gulf in the first place.

These observations have practical consequences. The United States is once again facing a crisis in science education, similar to the one that preceded the Russian launching of Sputnik. Almost daily the various news media tell us of decreasing test scores and other data suggesting a growing scientific illiteracy in our schools. We are being urged, as a country, to put a major effort into an expansion of our science education programs, and, indeed, the reasons for doing this are compelling. As was suggested earlier, our present society is shaped and guided by an ever-increasing technology. Consequently, to have a population unable to comprehend the basis of that technology is unreasonable and dangerous, as it leads to potential abuses of the power associated with the technology.

As we go about this expansion, however, we should ask ourselves about the conception of science that we want our culture to hold. Do we desire a science that is somehow isolated from the totality of human culture and experience? Do we want a science that is seen as having absolute answers to all questions? Our hope is that we will answer these questions negatively and not forget that science is but one part of human culture. The sciences and the humanities together make us human. As Jacob Bronowski has so aply stated, "Man is unique not because he does science, and he is unique not because he does art, but because science and art equally are expressions of his marvellous plasticity of mind." [14, p. 412].

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CURRICULUM DEVELOPMENT IN MANAGEMENT AND APPLIED SOCIOLOGY

WEDNESDAY, 3 JULY

1030 - 1200

AACSB AND CURRICULUM FROM 1975 TO 1985: A DECADE OF CHANGE - A BIAS FOR ACTION

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1975 TO 1985: A DECADE OF CHANGE FOR BUSINESS

Corporate America is experiencing its greatest challenge since the Great Depression. American managers are under direct attack from forces, both within the corporation and outside its organizational boundaries. Chief among the problems confronting business and industry is the disastrous collapse of American productivity, which has been declining for the past sixteen years. During the years 1947 to 1967, U.S. productivity rose at a favorable rate of 3.2 percent a year but, from 1967 to 1978, the rate fell to 1.6 percent, while productivity has actually declined from 1979 to 1981 (4). Thus, the U.S., once the world's undisputed leader of the industrialixed world, is today dead last among the twelve largest industrialized countries (12). Of course, the leadership in productivity has passed from the U.S. to "Japan, Inc.", whose productivity has increased since World War II at a rate that is 400 percent greater than ours (2). From 1960 to 1976, Japan's productivity soared by 289 percent, compared to just 57 percent in America (1). In the last decade, Japanese productivity has risen at an annual rate of 8 percent, while that of the U.S. has increased at a rate below 4 percent (3).

However, the productivity catastrophe seems to be only the tip of the managerial iceberg, as corporate managers are literally besieged by a host of urgent and complex crises including unemployment, job dissatisfaction (especially among professional and managerial personnel), quality of work life issues, employee turnover, demands for participative management opportunities, affirmative action, employee rights, consumerism, the allocation and conservation of scarce resources, environmental protection, social responsibility, cultural diversity, and problems arising from the international marketplace such as the trade deficit, third world debt, third world technology transfer, and the protection of American jobs, markets, and products.

1975 TO 1985: A DECADE OF CHANGE FOR BUSINESS SCHOOLS

Much of the criticism of American business management has been shifted to the American business school. Critics claim that the curriculum at business schools does not provide the sort of educational background that today's manager needs to manage a complex business organization. Business schools are charged with focusing their curriculum and teaching around the "rational model" of management which, critics claim: (1) is too narrow, too scientific, too academic, too quantitative, and too technique-oriented; (2) maximizes short-run profits at the cost of long-run effectiveness; (3) is not entrepreneurial , creative or innovative ; (4) punishes mistakes and fosters risk-avoidance at all costs; (5) fosters paralysis-by-analysis; (6) promotes complexity and rigidity; (7) fails to recognize informality; (8) denigrates values; (9) produces managers without vision, without an overall sense of business perspectives, and without the ability to cope; and (10) fails to encourage the people-approach to management (4;7;8;11).

1975 TO 1985: A DECADE OF CURRICULUM CHANGE FOR AACSB

As both American management and American business schools have come under attack for not meeting the business and economic needs of the nation, The American Assembly of Collegiate Schools of Business (AACSB) has made a number of curriculum standards changes designed to provide more appropriate management education. The most recent changes resulted from a joint project conducted by the AACSB and the European Foundation of Management Development (EFMD). The project was a three-phase operation to determine: (1) The Changing Expectations of Society in the Next Thirty Years, featuring a colloquium at Windsor Castle in February 1979; (2) The Implications for Management in the XXI Century, featuring a colloquium at Arden House in November 1979; and (3) The Implications for Management Education and Development for the XXI Century, featuring an international conference in Paris in June 1980 (5;6;10).

THE MAJOR CURRICULAR CHANGES OF THE DECADE

The curriculum standards changes that have resulted in the greatest cahnge activity at the business school over the past decade dealt with; (1) management information systems; (2) production/operations management; (3) environmental scanning; (4) international business; and (5) noncognitive, affective learning.

1. Management Information Systems. There is no question that the "post-industrial society" is, in truth, the "information society", in which Naisbitt (7) tells us that there will be two required languages - English and computer. Certainly, the emerging information industry holds the hope of the future of American business because, as early as 1967, 25.1 percent of the U.S. GNP was produced by the Primary Information Sector, or that part of the economy that produces, processes, and distributes information goods and services. Another 21 percent of the 1967 GNP was produced by the Secondary Information Sector, or the information employees working for non-information firms. Thus, in 1967, the information industry accounted for 46 percent of the GNP and more than 53 percent of income earned (9). Certainly, the AACSB was well-advised in adding a curriculum standard for the integration of information systems in the business curriculum.

2. Production/Operations Management. Production management was a familiar part of the business school curriculum back in the 1950's but, as the times changed, the old production course began to disappear from business school catalogs. However, in the face of new managing complexities in managing automated equipment and processes, AACSB was correct to re-establish the requirement for specific study in the area of production/operations management as a part of the common body of knowledge.

3. Environmental Scanning. This concept first entered the business core under the construct of the "legal envirnment of business," replacing the old business law courses. The legal environment philosophy was expanded by the joint AACSB/EFMD project to reflect a more global "environmental scanning" to prepare the manager to deal with a broader range of social/cultural/political/economic/ethical issues with a focus on governmental regulation, self-regulation, changing societal expectations, social responsibility, cultural diversity, and international business.

4. The Internationalization of Business. Managers of the future need greater insight into the complexities of international business [illegible]

management, comparative commercial law, comparative analysis of professions, the role of international labor and international unionism, the role of international economic institutions, international accounting standards, third world issues, and the related matters of social/cultural/political diversity,

7. Noncognitive, Affective Learning - Managers for the XXI century must be better prepared with special noncognitive, affective skills in empathetic interpersonal communication, interpersonal behavior, organizational behavior, organization development, organizational change, organization design and dtructure, organization theory, negotiation and bargaining. The future will be shaped by negotiated arrangements in a transformed social contract, demanding new learning in the critical field of effective negotiation and bargaining.

THE INVESTIGATION

The purpose of this project is to measure the responses on the part of business schools to the major curriculum standards changes made by the AACSB in the past decade. Both accredited and non-accredited business schools were surveyed to test the hypothesis that accrdited business schools would demonstrate a more positive compliance with the standards changed by AACSB than the non-accredited business schools. For the purpose of this study, the U.S. business schools were divided into eight regions - Northeast, Mideast, Great Lakes, Plains, Southeats, Southwest, Rocky Mts, and West. From each region, a reandom selection was made of 20 accredited schools and 20 non-accredited schools. Thus, the total sample consists of 160 accredited and 160 non-accredited business schools from a balanced cross-section of the nation.The latest catalog for each of the 320 schools, as recorded on the microfish in the university library, was used to tabulate the curricular offerings that relate to the major AACSB changes of the past decade - Management Information Systems, Production/Operations Management, Environmental Scanning, International Business, and Noncognitive, Affective Learning. The last category was divided into three groups as follows: (1) Negotiating, including negotiating, bargaining, organizational change, organization development, power, conflict management, and interpersonal communication; (2) Organizational Behavior, including Organizational Behavior, Behavioral Modification, Behavioral/Experiential Lab, Behavioral Science, Industrial Psychology, and Human Engineering; and (3) Organization Theory, including Organization Theory, Organization Structure/Design, and Organizational Networking.

FINDINGS

The results of the microfish catalog survey of the 320 American Business schools in the study are presented in Table 1. The data shows significant support for the hypothesis that accredited schools would demonstrate a more positive compliance with the major curriculum standards changes incorporated by AACSB in the past decade. A brief review of the detail findings are as follows:

Management Information Systems. Considerable progress has been made at most business schools to integrate information systems into the curriculum. The 160 non-accredited schools offer an average of just over 5 MIS courses, while the 160 accredited schools offer almost 10 MIS courses each, for a significant improvement. The national average for the 320 schools in the sample is just over 8 MIS courses per school.

Production/Operations Management. Production courses are reappearing frequently as a result of the change in the standards. For the non-accredited school, there is an average offering of about 1.5 production/operations management courses offered. For the accredited schools, the average is 2.25 courses offered, for a significant differential. For the total sample, the average was about 2 courses in production/operations management.

Environmental Scanning. The environmental scanning meansfor the non-accredited sample was less than one course perinstitution, while accredited schools offer about 2 courses each, for a significantly higher response. The national average is about 1.5 courses for each school.

International Business. International business oferings were tabulated with special attention given to two critical emerging problem areas - third world issues and international labor/unionism issues.

1. Third World Issues. Very little appears in catalogs that adequately addresses

Table 1

CURRICULUM RESPONSE INDEX QUANTITY AND MEANS - ACCREDITED VS. NON-ACCREDITED U.S. BUSINESS SCHOOLS (n=320)

							INTERNATIONAL BUSINESS					
	MIS		PROD/OPS		ENVIRONM SCANNING		3rd WORLD		INT. LABOR		INT. TOTAL	
	QTY	MEANS	QTY	MEANS	QTY	MEANS	QTY	MEANS	QTY	MEANS	QTY	MEANS
NON-ACCREDITED (n=160)	846	5.29	262	1.64	155	0.97	4	0.03	3	0.02	335	2.09
ACCREDITED (n=160)	1792	8.96	360	2.25	299	1.87	22	0.14	26	0.16	475	2.97
SIGNIFICANT ($p<0.05$)	*		*		*		*		*		*	
TOTALS (n=320)	2638	8.24	622	1.94	454	1.42	26	0.08	29	0.09	810	2.53

	NONCOGNITIVE/AFFECTIVE									
	NEGOTIATE		ORG BEH		ORG THEORY		N/A TOTAL		CURI INDEX TOTALS	
	QTY	MEANS	QTY	MEANS	QTY	MEANS	QTY	MEANS	QTY	MEANS
NON-ACCREDITED (n=160)	206	1.29	103	0.68	98	0.61	412	2.58	2010	12.56
ACCREDITED (n=160)	340	2.13	239	1.49	205	1.28	784	4.90	3710	23.19
SIGNIFICANT ($p<0.05$)	*		*		*		*		*	
TOTALS (n=320)	546	1.71	347	1.08	303	0.95	1196	3.74	5720	17.88

the issues suurounding the third world. Although accredited schools offer significantly more third world coursework than non-accredited schools, the response is still very weak, with less than one school in twelve listing a course dealing with third world problems.

2. International Labor Issues. Again, very little is offered in the area of international labor and international unionism. Offerings by accredited schools are significantly more than those of non-accredited schools. However, overall, only one school in twelve offer a course in international labor.

3. International Business - Total. Fair progress is demonstrated in the overall offerings in international business. The average non-accredited school offers about 2 international courses, while the average accredited school affers three, for a significant differential. The national average for international coverage is about 2.5 courses.

Noncognitive/Affective Learning

1. Negotiating. Good response was found in the offerings of courses that deal with negotiating, bargaining, organizational change, organization development, power, conflict management, and interpersonal communication. Non-accredited schools offer an average of 1.29 courses, while accredited schools do significantly better at 2.13 courses each. The national mean is 1.71 courses per school.

2. Organizational Behavior. The response was not so good in te offering of courses in organizational behavior, behavior modification, behavioral/experiential lab, behavioral science, industrial psychology, and human engineering. Non-accredited schools report a means of only 0.68 courses each, with accredited schools reporting a significantly higher means of 1.49. The overall average is still less than one course per school.

3. Organization Theory. Offerings in the area of organization theory and design were not found to be strong. For the non-accredited schools, the average offering is about a half course and, for the accredited school, significantly higher at 1.3 courses. The national means was less than one course.

CURI Totals. The Total Curriculum Response Index (CURI) was not strong, as non-accredited business schools average only about 12.5 courses that address the five major areas of curricular change. Accredited schools reported a significantly higher CURI of 23.2 courses each. However, given the total of five broad curricular areas, and the critical nature of the recommended changes, the national CURI of less than 18 courses per school does not seem to be very responsive.

CONCLUSIONS AND IMPLICATIONS

The nature of this study creates a number of weaknesses and shortcomings that require consideration. Of course, there are the usual problems related to the nature of content anaylsis. Another problem might be found in the relative currency of the library's microfish file. Another deficiency lies in the vagueness of some course descriptions that lead to errors in interpretation or generalization. Furthermore, the listing of a course in the catalog does not necessarily mean it's ever offered and, if it is, it may be cancelled for a variety of reasons. Finally, there is the problem of the professor who "does his thing" in the classroom without regard for the course description.

Depite the above procedural weaknesses, the findings unquestionably disclose a poor overall response on the part of the nation's business schools to what appears to be legitimate and appropriate curricular changes by the AACSB. As expected, accredited schools, facing possible accreditation sanctions, reponded more positively to the change in standards than non-accredited schools, who probably view AACSB edicts as nothing more than interesting suggestions to be considered. Failure on the part of faculty and adminidtrators, alike, to respond in a more obligatory od conscientious manner to improve the quality of management education may indicate that business school administration suffers from the same "paralysis-by-analysis" that critics claim we teach to our students. Obviously, business schools lack a "bias for action", which Peters and Waterman find is one of the driving forces of excellent companies (8) Certainly, much needs to be done to up-date business school curriculum, and business schools need to adopt a "bias for action" and get on with the task, if we are ever to experience a cohesive purpose in our pedogogical endeavors

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THE CRYSTAL CURRICULUM:
AN INNOVATIVE APPROACH IN MANAGEMENT EDUCATION

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Management education has developed some interesting and fine curriculum model. Among these are the AACSB common body of knowledge and the American Management Association competency curriculum. The traditional AACSB model is considered the benchmark against which other programs are judged.

The purpose of this paper is to present a third perspective in management education. We have labeled this new approach the "Crystal Curriculum" because of its multifaceted components which interlock into a coherent whole. This curriculum was designed and is currently being used by the College for Human Services.

While containing the common body of knowledge of the AACSB model, considered the foundation of traditional business curricula, the College's program also demonstrates the necessary interdependence of each knowledge area, so often overlooked in traditional business education.

As the United States becomes the leading post-industrial service society, the demand grows for new ways to prepare the kind of business leaders the service economy requires. At the same time, there is an ongoing debate between academia and business about what business education should emphasize — the theoretical (advocated by academic institutions) or the practical (advocated by business).

To bridge the gap, a new program which integrates theory and practice into one cohesive whole hass been established by the College for Human Services. It was designed for people who work in the service sector in such industries as

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banking, communicatins, insurance, and securities brokerage. It is also for those in goods producing industries who work in a sevice oriented capacity like personnel, finance, marketing and public relations. All these people face problems and issues that are tremendously complex and in some ways quite different from those confronting the traditional goods-producing sector. There is thus a need for a business education that addresses the specific requirements of this vast, growing, and changing service sector of the business world.

Business Education Reform

Ever since the Gordon and Howell study, (sponsored by the Ford Foundation) and the Pierson study (sponsored by the Carnegie Commission), were published in 1959, higher education for business has been in a constant state of change and refinement in its effort to implement those recommendations. However, even though business education has improved significantly since 1959, the business community has been increasingly critical of the business training provided by higher education institutions.

A Conference Board study, under the direction of Michael Duerr (1974), indicated that several major educational problems remain to be solved if business eudcation is to fulfill its overall mission of training future business leaders:

1. overemphasis on theory, at the expense of practical instruction;
2. failure to impart an understanding of the economic system and particularly the role of business in the system; and
3. anti-business bias on the part of education.

To get the full impact of these problems, one need only review a speech presented by Fletcher Byrom, retired Chairman of the Board of the Koppers Company, to the american Assembly of Collegiate Schools of Business in 1975.

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Byrom was highly critical of the ability of business educators to train future business leaders, and he challenged his audience to correct the shortcomings of the current approaches to business education.

Partly as a result of criticism by Byrom and other key business leaders, the American Assembly for Collegiate Schools of Business began to look at different ways of addressing the problem of training future business leaders. In 1979, it launched a multiyear project to determine the feasibility and effectiveness of using output standards (i.e., demonstrated capability on generic characteristics related to business and management) as the basis for accreditation of business programs (Laidlaw & Zoffer, 1979; "A Plan to Rate B-schools").

In Richard Boyatzis' recently published book, The Competent Manager, he states that "the use of such output standards or generic characteristics to assess the value added to a person by attending a college or university program would help to establish relevance and effectiveness of such programs in preparing people for jobs in business, including jobs in management."

Interim findings of the American Assembly of Collegiate Schools of Business study as reported by Zoffer in the April 1981 issue of Management Review indicates that a survey of business people and academicians identified a half dozen or more areas in which business schools might want to concentrate their efforts:

1. Administrative skills such as organizing, planning, decision-making and creativity.
2. Interpersonal skills, such as leadership, oral communication, behavioral flexibility, personal impact and perceptions of social cues.
3. Intellectual ability, including range of interests, general mental ability, and written communication skills.

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4. Stability of performance, including such traits as tolerance of uncertainty and resistance to stress.
5. Work motivation.
6. Business values.

In the Management Review article mentioned above, Zoffer also states that "Now, for the first time in years, there are rumblings about the need to expand and broaden management education to reflect the manager's increasing obligation to understand and cope with societal problems."

The Crystal curriculum addresses the key concerns of business educators and corporate leaders interested in preparing business professionals who can handle the complex issues tha face the service economy in the years ahead. Providing a performanc-based interdisciplinary approach to education, the program incorporates the common body of knowledge in business with business values, interpersonal skills, societal implications, written communication and work motivation so necessary to the education of future professionals.

GOALS AND OBJECTIVES

The overall goal of the College's program is to provide a performance-based education, in partnership with business.

More specifically, the program seeks to prepare people:

1. Who have the knowledge and skills required for effective work in organizations and units of organizations whose primary product is services rather than goods.
2. Who are trained to relate theory from business and the social sciences to the specific needs of their company and the requirements of their job, and who can put this theory to work immediately on the job.

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3. Who recognize that productivity in a service society, depends on helping people to become more productive because they become better able to grasp issues, analyze processes, and use new technologies.
4. Who understand the multiple claims and conflicting interests of the many constituencies to whom the service industries are held accountable and who are able to make informed, just, and realistic judgements based on these claims.
5. Who understand the new importance of establishing ongoing productive professional relationships both within the firm and externally withh consumers, community grouuyps, government agencies, etc., and who understand the implications of this emphasis for every aspect of compnany operations.
6. Who understand the relevance of the liberal arts to their work in busienss and are trained to draw on the liberal components of their education on their own experience in problem solving and planning.
7. Who have developed an ethical foundation on which to base an analysis of the impact and consequences of various complex business decisions.
8. Who are ready to take responsibility for their own professional development through continuing evaluation of their abilities and interests in relation to management's goals, and through engaging in a life-long process of developing their competence in accordance with the changing needs of service-oriented business.

THE PROGRAM

Performance Areas

Through intensive research, the College identified eight areas of performance that are critical to productive service in organizations. The business program is organized around these eight performance areas into eight

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learning crystals. Each crystal is an integrated performance-based unit of study equivalent to one semester of traditional college work. Each crystal represents a major area of performance. It cuts across traditional business and liberal arts disciplines. It provides a new way to organize the knowledge essential to a service-oriented business. It is learning focused on performance. Traditional disciplines like Management, Marketing, Finance, Economics, Accounting, and Law are studies in relation to performance. These eight components of effective performance are identified as follows:

1. SELF-ASSESSMENT AND PLANNING FOR PROFESSIONAL DEVELOPMENT

Theoretical material is organized to help students relate business knowledge, skills, and career goals to company needs and employment opportunities. They study the history of American business and the fundamentals of organizational analysis, economic theory in historical perspective, introductory marketing, statistics, financial systems, and the key management functions.

2. BUILDING PROFESSIONAL RELATIONSHIPS

Materials are selected to help students analyze their firm's place in its industry, clarify their job responsibities, and develop relationships conducive to learning and productive work. Students are introduced to macro-economics, organizational theory, American government, the legal system, and human growth and development from physiological and biological perspectives.

3. WORKING IN GROUPS

Using concepts from industrial sociology, students analyze formal and informal groups in the firm and participate in helping a work group establish and achieve its goals. They study social influences on development, the sociology of group behavior, micro-economics, and the direction function of management.

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4. RESEARCH AND COMMUNICATION

Students demonstrate their ability to plan and conduct research and to report results in a manner that facilitates decision making. They study cognitive development and learning theory, marketing research approaches, the control function of management, sources and uses of economic data, questionnaire design and data gathering, methods of statistical analysis, and programming in basic computer language.

5. OPTIMIZING HUMAN RESOURCES

Students acquire knowledge and skills needed to prepare a plan for improving the firm's human resources. Areas covered include labor economics, recruitment, compensation, job analysis, training and performance evaluation, as well a societal and developmental factors that affect performance and motivation in the workplace.

6. CREATING A MARKETING STRATEGY

Students develop a marketing plan consistent with the long-term strategic goals of the firm. Classwork focuses on the strategic planning function of management, market research, marketing strategies, correlational analysis in statistics.

7. MANAGING TASKS AND PROJECTS

Students serve as project leaders, supervising other employees in the development and implementation of an operational system. In the classroom, they study theories and techniques of project managment, labor law, and roles and role behavior as they relate to motivation and productivity.

8. MANAGING CHANGE: DEVELOPMENT OF A BUSINESS PLAN

Drawing on material taught in all eight crystals, students are expected to complete the development of a business plan, win the support of decision makers, and move the plan to implementation. Areas of study include strategic

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planning, breakeven analysis, taxation, cash flow, legal entities, and economic forecasting. (Chart 1 portrays the eight areas.)

Dimensions

Within each crystal, study and practice are organized around the five dimensions, (see Chart 1). These represent the qualitative aspects of performance:

1. Purpose
2. Concern for values and ethical issues
3. Understanding of self and others in the business context
4. Understanding of systems
5. Mastery of skills

The dimensions provide guidelines for selecting areas of study and theoretical materials relevant to each crystal. They ensure that each crystal covers the knowledge and skills essential in each performance area.

The crystals and the dimensions provide the basic framework for program designed to meet the needs of people working in service-oriented business. (Chart 1 shows the entire curriculum).

Requirements

Each crystal lasts 15 weeks and is worth 17.6 credits. Students must complete all eight crystals and earn 140.8 credits in order to graduate.

In each crystal, the theoretical material is presented in four dimension classes. The fifth dimension, Purpose, is represented by the Clinical Seminar.

Constructive Actions

In order to earn credit for the Clinical Seminar and for field work, students must plan and carry out a Constructive Action. The Constructive

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Action will be a significant piece of work planned under the direction of a work supervisor to solve some problem or meet some genuine need of the employing firm.

Each Constructive Action also has to fulfill the performance requirements of the particular crystal in which the student is enrolled. The Constructive Actions provide students with a concrete way to relate the educational program to the actual problems that confront the employing firm and the industry it represents. The Constructive Actions demand close cooperation with the employer to make sure that students translate theory into practice. As a learning method, the Constructive Action is a dynamic alternative to the case study method.

The Field Internship

The relationship the program builds with collaborating companies is of critical importance. The Field is where each student tests his or her self-perception of competence, where the "conscious use of self" becomes not only a concept and an ideal, but a working principle. In field internships, students test the relevance of existing theory and discover the need for new theory. They learn to deal with the inevitable tension between the desirable and the possible and to struggle for a merger of the two. The field experience may at times be exasperatingly imperfect, but it is absolutely real. The status of student is no excuse for irresponsibility or poor service.

Summary and Conclusions

As can be seen by the preceding paragraphs, the College for Human Services business program provides a viable alternative to traditional academic programs. It establishes a "mentoring system" among student, faculty member, and work supervisor. It provides direct application of business theories and

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uses the liberal arts to stimulate thought and analysis. Finally, the program is meant to provide a learning experience that is cohesive, holistic and meaningful within both the student's life as a business person and as a member of society.

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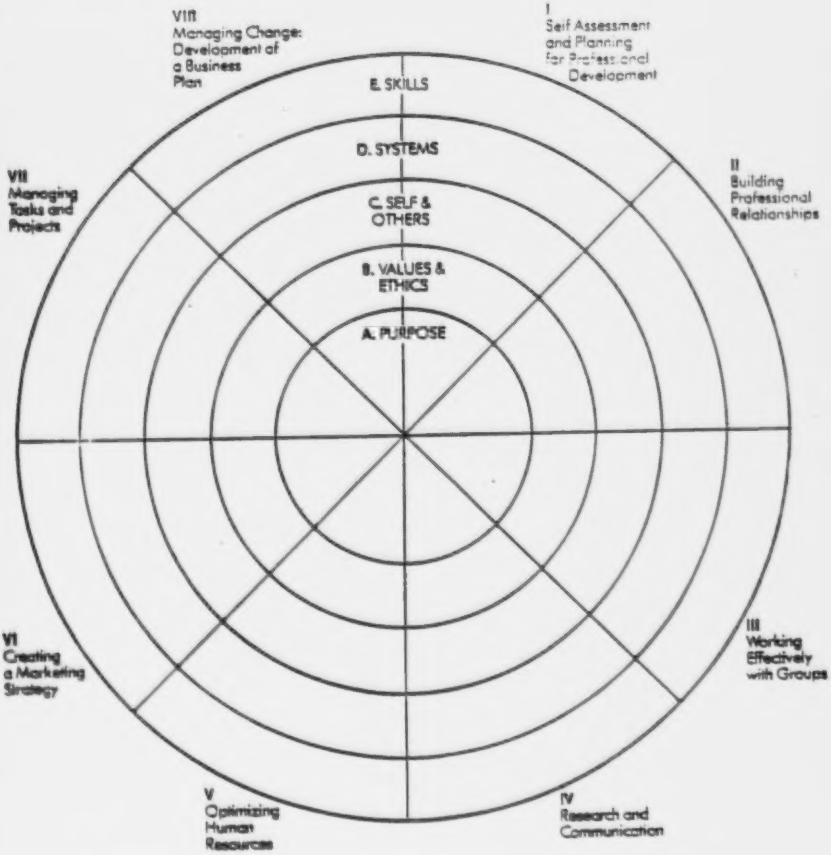
CHART 1


I
Self Assessment
and Planning
for Professional
Development
II
Building
Professional
Relationships
III
Working
Effectively
with Groups
IV
Research and
Communication
V
Optimizing
Human
Resources
VI
Creating
a Marketing
Strategy
VII
Managing
Tasks and
Projects
VIII
Managing Change:
Development of
a Business
Plan
E. SKILLS
D. SYSTEMS
C. SELF &
OTHERS
B. VALUES &
ETHICS
A. PURPOSE

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DEVISING AND IMPLEMENTING AN APPLIED SOCIOLOGY GRADUATE PROGRAM

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Sociologists have long debated the worth of applied sociology to the discipline, as well as questioned the viability of creating an occupational niche for applied sociologists in non-academic settings: Will the development of Sociology's applied side impede theory-building and basic research? Does it ultimately threaten to weaken sociology's appreciation of value-neutrality, which has been axiomatic to training research sociologists? Can applied sociologists effectively serve the ends of social or public policy, human services and other groups and organizations who are soliciting their professional services? And, do employment trends truly justify a reinvestment of educational resources and personnel toward the end of increasing the output of graduates trained in applied sociology? Although answers to such questions have been explored (e.g., Rossi, 1980; Rossi and Whyte, 1983; and Gondolf, 1983), there remain still wide variations across the discipline as to the place of applied sociology in university curricula and on the merits of its scholarship.

Despite this unsettled debate, the fact is that applied sociology courses and programs at both graduate and undergraduate levels are undergoing rapid development in colleges and universities across the nation. DeMartini (1983a) for example, reports that 51 percent of departments listed in the 1982 American Sociological Association's Guide to Graduate Departments indicated that they offered training in applied sociology--a substantial increase from the 13 percent appearing in the 1974 guide. Although this sharp increase in the appearance of applied curricula far from settles the ongoing debate among sociologists, it clearly demonstrates that applied sociology is a reality of the profession, and as Howery (1983a: 33) points out, "a need exists *ipso facto* for sociologists to familiarize themselves with such programs."

The paper contributes to a rapidly expanding body of literature, segments of which are cogently presented in recent works edited by Howery (1983), and in *Teaching Sociology*'s October, 1983 special issue on applied sociology, on program planning and curriculum development in applied sociology through a case study of the M.A. program at the University of Massachusetts, Boston. Although it bears similarities in part to programs cited by Groves (1981), Grasmick *et al*. (1983), Demartini (1983a), Reynolds (1981) and others, and speaks to obstacles and issues in program development earlier discussed by Grusky (1983) and Mauksch (1983), among others, the Massachusetts-Boston program is probably unique in the type of political-economic constraints it confronted.

The History and Structure of the Applied M.A. Program

The University of Massachusetts at Boston, or UMB, is twenty years old. Initially, all departments were expected to devise traditional M.A. and Ph.D. programs. The Sociology Department constructed a typical Ph.D. stepping-stone type MA proposal that took four years (from 1971 to 1975) to move from the department to a final level of administrative approval. After innumerable meetings and discussions at all levels of review, the proposal was ultimately approved by the University Assembly in 1975, and forwarded to the chancelor's office for final review. However, this was the year of a budget crisis; thus, before the Chancellor had time to act on the proposal, the Board of Trustees declared a moratorium on all new graduate programs.

The moratorium was lifted in 1979, but by then the rules governing review and approval of new programs had changed. For a number of reasons, including pressure from certain private institutions, and the declining availability of teaching posts at all ranks, the Trustees ruled that a traditional M.A. program was no longer acceptable. We were required to revise our proposal to prepare students for immediate employment and without competing with any existing graduate programs in the Boston area, at either public or private institutions.

The task of revising a proposal along the lines required seemed formidable because of the necessity of having to enlist full support of the department on the one hand and to anticipate the various expectations of the bureaucratic hierarchy on the other. The problem of department support was greatly aided by fear of possible faculty retrenchment unless something could be done to offset declining undergraduate enrollment. Thus, the subject of concern rather quickly shifted from program need to program emphasis, i.e., what and how many tracks to propose.

Selection of the first rack was virtually automatic as we had long had a well-developed and thriving undergraduate concentration in corrections. After some discussion and debate, two other tracks were proposed for delayed implementation - medical sociology (to emphasize the development of expertise in the organization and delivery of health care services) and research methods (to stress skill training in basic survey research and program evaluation, computer applications and applied research methods).

The revised proposal encountered some, but not as many obstacles as was anticipated in being re-routed through the bureaucratic maze. Essentially, what pleased the higher administration displeased many faculty members. That is, linking the university's curricula to the local economy may be greatly desired by administrators wishing to please state legislators and private education interests, but feared by faculty wishing to protect academic freedom and the integrity of a liberal arts education. In any event, the revised proposal gained final approval in the summer of 1982.

Admissions and Degree Requirements

Applicants to the program are ideally expected to have either an undergraduate major or not less than 18 semester hours in sociology courses, including sociological theory, research methods and statistics. These, together with supporting admissions documents and a high-quality record of scholarship, constitute minimum admissions criteria.

Degree requirements for the M.A. include a minimum of 36 semester credits. Half of these are consumed by required or core courses, electives in one or a comination of three tracks (corrections/criminology, medical sociology, methodology), and the internship and thesis requirements.

The Core Curriculum

Faced with tight budgeting and hiring restrictions, we had to develop a curriculum that maximized existing strengths without neglecting subjects basic to an applied program. Accordingly, the following core areas were identified: human and social service organizations; social problems; social policy; and evaluations research and applied methodology.

As mentioned earlier, both criminology and medical sociology--areas that continue to generate interest among applied sociologists--were those that could be used as specialization tracks. These, of course, will vary by program (e.g., social/human services, substance abuse, higher education, race/ethnic relations, population.) Regardless of "specialization," information from our earlier surveys of the Boston-area job market and existing programs nation-wide demonstrated the need to prepare our students not only in social policy and research skills, but in a substantive topic area connected with a specific job market.

In both areas, courses emphasize a curriculum of mainstream sociological theory and research and their relevance to practical issues in corrections or health-care services and delivery-systems. And, especially in the "issues" courses, students are afforded first-hand field observations (i.e., site visits) to institutional or agency settings. In fact, in corrections about one-third of the class meetings are conducted at correctional facilities, either at administrative/research headquarters or at institutional settings.

Lastly, the final link in the UM/B applied sociology curriculum rests in the actual field work and graduate seminar in the track areas, which involve actual placements in an agency or field setting. Placements, of course, vary by student interest and by availability of internship openings: probation/parole, administrative, research or institutional contexts in the Department of Corrections, Mental Health, Human Services, in legislative and social policy contexts or in research departments of private business. But, unlike most internship courses, the field setting becomes a context in which a student develops either a Master's Paper or an optional Master's Thesis. (The thesis option is available to students who anticipate pursuing a doctoral degree.) In either option, student work is guided by a faculty committee, chaired by the student's program advisor, which utilizes the field setting as a context in which to develop a research project, theoretical essay or problem paper.

Although a graduate student's work is directed by both an agency-based supervisor and his/her committee chair, a field work seminar, taught either by the Graduate Program Director or by a faculty member experienced in developing and operating internship programs, functions as an academic context in which to integrate field work experience with theory and research, to discuss selected issues (e.g., agency politics, ethics in research on human subjects, legal dimensions of human services work, etc.) that run across almost all internship assignments, and to handle the logistics of developing internship opportunities, placing interns and formalizing agreements with agency personnel.

The Post Implementation Experience

To a considerable extent, an applied MA program was forced on the department by political, economic and demographic circumstances. A university administration concerned with meeting the needs of a predominantly working-class student population in a period of declining tax-payer support for public institutions and an era of reduced enrollment prospects due to a decline in the pool of the traditional college age population, required a more marketable alternative to the traditional MA degree. With only minimal doubts and questions, department members accepted the administration's logic and the need to develop an applied program.

From the outset, thinking focused on the most appropriate means of recruiting and training students. Looking back after the first year-and-a-half of operation, it is apparent that equal attention should have been paid to appropriate means of training faculty as well (recruitment of new faculty was out of the question). Of course, there was no precedent, no available body of information, that might have alerted us to the point made recently by Freeman and Rossi (1984: 575) "that it is not possible to train students in applied sociology without on-going faculty involvement in the work we are training them for, any more than it is to teach surgery without opportunities for the faculty involved to perform operations themselves."

To be sure, some department members had served as consultants and conducted contracted research for private and public agencies, but most did not. Further, not one had first-hand knowledge of any local firm or bureau. One result has been a marked tendency on the part of those without applied research experience to decry the absence of traditional scholarly virtues in many of their students, e.g., a perceived lack of student interest in a thorough scouring of the literature in paper and examination preparation. Instructors in this camp seem especially troubled by what they perceive to be excess student interest in immediate problem solving as opposed to general intellectual development. At bottom, what seems to trouble these faculty members is the potential sacrifice of traditional academic standards to short-run economic and political exigencies. Few acknowledge the possibility that "pure" sociology may have much to gain by on-going contact with non-academic clients who have immediate and practical problems to treat and solve. As freeman and Rossi summarize the point (1984: 572), "an...impediment to applied programs is the deep conservatism of academia in general, a stance that inhibits virtually all efforts to improve our lot."

On way we plan to deal with the problem of "academic conservatism" is by regular placement of faculty in agencies likely to hire our students, e.g., the Research Division of the state's Department of Corrections and local hospitals. This will require the purchase of release time for which we have sought funding from a government agency.

As we see it, if an applied graduate program is to survive, it must aim to combine traditional scholarly aims and standards with the demands of problem solving in the everyday working world of a diverse clientele. Many scholars concerned with the ethical and moral consequences of applied social research (for example, Beals: 1969, and Sjoberg: 1967) have heightened awareness of the pitfalls and dangers of funded research, but few (a notable exception is Peter Rossi and colleagues) have examined the possible benefits of applied research. The positive possibilities include awareness of new problems appropriate for scholarly examination, the invention and discovery of new research techniques to meet situations not otherwise to be identified, the creation of theory to unite newly recognized problems and newly created research methods, and, perhaps most of all, the acquisition of wider public support for the value and importance of social science.

Whatever the pros and cons of applied research, if sociology is to be a science one must in some way acknowledge Lester Ward's assertion (1898: 263) that "the true test of a science is the application of its principles to some useful purpose." The question is, of course, what "useful purpose"? In seeking an answer to the question, the applied sociologist must consider the aims of both his/her discipline and employer(s) and how his/her work is to be implemented with what likely consequences (ethical, moral, physical, social and so on) for the common welfare. It seems to us that much more is to be gained than lost by confronting rather than avoiding such problems in the full range of circumstances (pure and applied) in which they are implicated.

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STUDENTS' CONCEPTIONS OF LEARNING AND THINKING

WEDNESDAY, 3 JULY

1330 - 1500

AN EXPERIMENT IN LEARNING STRATEGIES AND CYBERNETIC LEARNING

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1. Purpose of the Experiment

Learning constitutes one aspect of social skills. In a course about social skills the students were thus also trained in learning. As theoretical aids they received one text about experimental learning and one about learning according to Skinner. No further learning theories were assigned since it was an important aspect of this course to develop the awareness of the participants for their own actions and individuality. (The awareness usually applies to the material studied, or in general, and not to one's own individuality, the development of which is of primary importance in social actions.) They were not educated to be experts, but to act as advisors who would be capable of shaping social processes according to the wishes of those affected by them. The students were challenged to plan their learning and follow through on the plan, to describe their actual learning behavior, or reflect on it, and let these reflections flow back into a new study plan. The student plans were exchanged groupwise and analysed. Conclusions were drawn from them to the purpose of improving learning and developing awareness for one's own learning habits. The group leaders took care that it wasn't only general solutions that were arrived at, but also those possibilities that were optimal for each student.

The students were to deepen their awareness of their own learning behavior and that of others, and use this awareness for improvements according to their own judgement. In order to reach general conclusions, they examined which learning strategies were most common, what kind of differences between study plans and actual learning behavior appear, if and how the reflection influences the learning strategy, and if and how the longrange learning behavior is affected.

2. The Experimental Situation

In contrast to the US, only about 10 % of Swiss young people attend a higher school, called a Gymnasium, the diploma of which qualifies them to begin studies at a Swiss university. When they begin their studies they are about 19 - 20 years old. The average length of study is 4 - 6 years but it can take longer.

The experiment was undertaken with 24 students, the majority of whom were in their 3rd semester, in a course called "Mensch und Organisation" (or Man and Organization) in the winter semester of 1984/85. A trial run had taken place the previous year, the results of which were also taken into account.

The course consisted of 15 sessions of nearly 3 hours each, taking place once a week. The 24 students were divided into 4 groups of 6 members each. A tutor, an older student especially trained for this assignment, led the group.

The first two thirds of the semester were spent on training and teaching the students, the last third on practical experience. In preparing the training sessions the participants studied a text about, for example, experimental learning, Skinner's learning theory, the threefold concept of man, communication rules, contact and cooperative methods, a conflict model, etc. The students applied the material in role games and exercizes. In the practical part they visited organizations and interviewed managers about, for example, the process of manager's conferences (they sat in on one) or the management styles that are cultivated, or the existing information problems, in order to experience the importance of social techniques in practice. Each session ended with a short evaluation and review.

On the first day the students received the assignment of setting up a study plan with goals such as, for example an 80% success rate with 4 hours work per week, and handing it in. At home they learned the assigned text - maybe according to their study plans - and sketched the actual learning process. Each group session began with a text, which each member corrected himself, measuring his success rate in percentages.
In the group they presented their actual learning processes and discussed improvements that would lead to a new study plan for the next section of the study material.

The following session had the same format and, again, ended in a revised study plan. In subsequent sessions the student evaluated the success of his learning according to his contributions in the exercizes, discussions and role games. In the last training session the students brought along a sketch of their present actual learning process and a projection of their future learning and discussed the results in a group.

The course directors and the tutors did not influence the discussion in any way. The students were familiar with experimental learning and the learning strategies of their colleagues in the group as well as the learning stategies used in the pilot period. They also knew the distinctions between holist and serialist-learners (Pask), surface and deep-level learning (Marton) and the field theory (Lewin).

All study texts were supplied with control questions (open-ended and essay questions) that correspond to Bloom's taxonomy levels.

3. The actual Learning Strategies.

The actual learning strategies proved themselves to be very interesting. They were different from student to student. Rote learning, or surface-level learning, turned up distinctly but rarely. Another group can be described as cognitive learners, the third as controlled learners. Both of these last types of learning can be described as deep level learning, but the differences in the level are very considerable.

a. Surface Level Learning.

Example:

1. look at page one
2. read it 2 - 4 times
3. memorize certain points (thinking activity goes into selection)
4. go to page two, etc.
5. at the end review everything again quickly.

The example shows intermittent learning, which turns up very often. Continuous learning, where all the material is learned at the same time and only once, is rare. Various methods of selection occur, i.e. the text is not learned completely. Examples for this kind of selection are: learning titles, isolating concepts and learning them, learning the outline, either the available one or one done oneself, only learning the first half, because of lack of time for the second half, etc.

b. Cognitive Learning

Thinking as a way of dealing with concepts, ideas, experiments, that are linked up then unlinked and reconnected, very often accompanies learning. Repeated thinking through of material leads to mastery over it just as memorization does. At the same time learning goals like understanding (comprehension), application analysis, synthesis and evaluation are pursued. The student practices answering problem questions with this process, questions that will not be asked until exam-time.

The following thinking activities were mentioned in the study plans:

- made a list of all important concepts
- marked the most important lines
- answered control questions, in writing or verbally
- explained the text in my own words
- looked for examples out of my own experiences
- made an outline or table of contents
- wrote out subtitles
- picked out concepts and compared them with others
- defined words that weren't defined

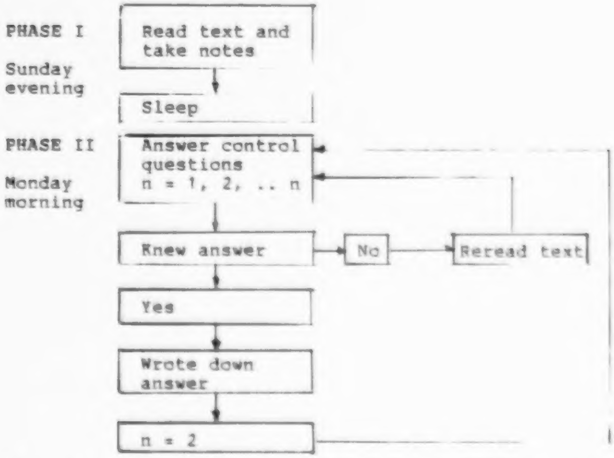
- wrote summaries
- wrote down key words from memory and discovered relationships between them
- found main themes
- discovered author's viewpoint
- wrote a sketch as an aid to memorizing, reproduced the text with the help of the sketch
- made comparisons with, for ex., previously learned material or concepts, ideas, relationships
- answered control questions alone without recourse to the text. Dictionaries can be used.
- understanding and as a preliminary: making understood.

A flow chart for cognitive learning could look like this:

1. Look through the text for titles, chapters, illustrations and get a first impression.
2. Read and - underline
   - structure with marginal comments
   - write out unfamiliar concepts
   - look up unexplained concepts.
3. Outline the contents by section
4. Read the outline.
5. After a longer break (2-3 days) review the outline.
6. Before the test review the outline.

c. Controlled Learning

An example: Two-phased learning


PHASE I
Sunday evening
Read text and take notes
Sleep
PHASE II
Monday morning
Answer control questions n = 1, 2, .. n
Knew answer
No
Reread text
Yes
Wrote down answer
n = 2

"Thanks to the division into two phases, I knew about 50 % of the answers by the beginning of phase two", wrote the author.

The students mentioned other possibilites: remembering key words, paraphrasing them and checking back, memorizing titles and concepts, reading everything and learning it, then after a while writing down as much of the learned material as was still in mind, comparing the written with the text, and learning what is missing.

The control can be done continuously, by section, by page, but can also just be a final control. The controlled style of learning can be linked with straight memorization but also with cognitive learning.

The control was often planned. Because of lack of time, however, it was not rarely abandoned.

4. Differences between planned and actual learning behavior

Example: Study Plan

Goal: Success rate of at least 80 %, 8 hours of studying. To understand the text, be able to discuss the text, have a good grasp of details.

Structure: Divide the text into 3 sections, for each, write a summary. After having thought everything through, polish it for another two hours.

Location: At home in a quiet room, or in the law library.

Concentration: High. No distractions, no music. Highly motivated, the material is interesting, I am eager to learn more.

Learning Behavior

Summarized for eight hours but was too tired, had to move furniture twice, was too tired in the evening. Studied for two hours in the morning.

Effective learning time: two hours.

Studied at home.

Concentrating was difficult. Towards the end the distractions lessened, motivation rose and concentration was high.

Motivation mediocre, at first actual disinclination. Felt threatened and insecure (Skinner's teaching methods as text). Later accustomed myself to learning. Followed the planned sequences of learning, because I usually study like that.

A few differences:

- Always started a little later with studying.
- Put off studying until the last possible moment.
- Breaks are longer than planned.
- Distractions like cutting nails, coffee, mailman, visitors.
- I was interested in the material, but while studying became more removed from it.
- Guilty conscience because of failure to study according to plan.
- Girlfriend meeting me.
- Have a cold, toothache, headache, etc.

The field theory encouraged the students to open up about the inhibiting and motivating factors that led to deviations from their plans. Positive for some students is working in the evenings in the pool of light at their desk. To understand the text is motivating. Awareness of learning goals also helps. Answering control questions and being able to explain concepts make studying easier.

5. Changes in learning strategies

Crucial changes like replacing surface-level learning with cognitive or controlled learning did not result. As they became accustomed to the learning rhythm, students put in less time. When tests and other controls such as evaluating the quality of the contributions, were eliminated the commitment to study declined even more. An actual learning strike occurred when the remaining control questions were distributed. More than half of the students explained that they could no longer prepare the assignment for the next sessions, since, because of the approaching exam, they had to repeat material from the beginning of the course and work through the text and the questions systematically.

Further examples of changes in learning behavior:

- Choice of a quiet work area.
- Becoming accustomed to a difficult environment.
- Not dividing study time into very small sessions any more, but combining it into two blocks.
- Reading through several times instead of just once.
- Giving up studying interrelationships in favor of answering the control questions.
- No longer studying in bed.
- Writing outlines, summaries.
- Marking important sentences with a marker, to raise concentration.

learning the definitions by heart.

- No set study time.
- To be able to explain the learning matter to another person.
- Learning those points, which are important for the conduct of one's life.

6. Conclusions

The experiment with Bernese students brought results similar to those already written up in the relevant literature. The differentiation between cognitive and controlled learning proves to be fruitful but must be refined and examined in further experiments. The actual purpose of the experiment, to decisively change via the motivational chain the sensing of one's own learning behavior, its reflection and comparison with the learning behavior of colleagues and literature, was not achieved. The tutors however, reported a rising self-awareness in the student. To what extent this can be traced back to the learning experiment is uncertain.

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LEARNING: QUALITATIVE DIFFERENCES BETWEEN NOVICES AND EXPERTS

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Introduction

The concept learning doesn't mean the same to everyone. Säljö (1979 a) asked a rather heterogenous group of subjects during an individual interview the following question: "What do you actually mean by learning?". The answers to this question showed to differ enormously in a qualitative sense from each other. On the most general level of data processing there was a difference between reproductive and constructive views on learning (=learning conceptions). Within the reproductive conceptions a more detailed differentiation could be made into three qualitatively different kinds of answers: learning seen as 1) the acquisition of knowledge, 2) memorizing and 3) the application or use of all sorts of knowledge. In the constructive domain two kinds of answers could be discerned: learning seen as 1) the abstraction of meaning (the acquiring of insights), and 2) a process aimed at interpreting, understanding reality. These five learning conceptions also emerged in a study by van Rossum and Schenk (1984) with first-year psychology students as subjects.

In the study by van Rossum and Deijkers (1984) with first-year Arts students as subjects evidence was also found for the existence of a sixth learning conception: learning seen as self-actualization.

The latter conception distinguishes itself from the former five by the almost poetic language of the subject and the importance given to non-cognitive factors (emotions, feelings, intuition) in the learning process. Examples of this conception are to be found in (parts of) answers as "learning is living and living is learning" and "learning is growing and growing is conditional for a meaningful existence".

An harmonious integration of learning and living becomes increasingly evident.

The next quote from the answer of one of our subjects (subj. 79, van Rossum and Deijkers, 1984, p.6) is a fair example of this sixth learning conception: *"In this connection I mean by learning a conscious process to come to self-realization, impelled by curiosity. The "learning" of the most arid subject-matter can only be possible for me if this subject-matter is directly or indirectly connected with the way I stand in life. There must be points of contact with someone's inner life, there must be questions crying for an answer. Learning is the handling of the means "knowledge" in such a way, that it means an enrichment of the personality."*.

From research with apprentice students done by us up till now, the conclusion can be drawn that the differences in conceptions that these students have about learning are logically as well as empirically (Marton, 1983) strongly related to a) differences in intentions/activities when studying texts (surface-level versus deep-level intentions/activities; van Rossum and Schenk, 1984), b) differences in the quality of the learning outcomes (the quality was determined by means of the SOLO-taxonomy of Collis and Biggs, 1979 ; see also van Rossum and Schenk, 1984), and c) differences in views on (good) teaching (four qualitatively different *teaching conceptions* could be discerned by van Rossum and Deijkers, within the group of first-year students). In agreement with Perry (1970) we are of opinion, that the found differences in learning conceptions, study strategies, etc. not only reflect differences between people, but also different stages in the (identity) development of the individual. In our opinion in this case it deals especially with the epistemological development of students within a certain context, namely the academic system (van Rossum et al., 1985). The latter can in another wau be even more strongly said: in our opinion the results of our studies reveal, that the learning conception, in a wide sense, very directly determines at a certain moment in time the way in which a student experiences his/her study situation. According to our "theory", a student grants meaning to the study situation in terms of his/her learning conception, which exerts a constricting c.q. determining influence on a) the way in which the study situation can be perceived and b) the nature of the choices that can be made within this situation. In a sense this point of departure is incompatible with the contextual thinking of the Göteborg-group (F. Marton and his colleagues).

Säljö (1979 b) embarks on the question which people usually, within the academic world as well as in everyday life, are seen as the *best learners*, the experts. He remarks about this (Säljö, 1979 b, p. 443-444): "... my guess is that to most people the statement "being better at learning" has a purely quantitative meaning and consequently the decision as to who of a number of persons is the best learner is seen as a question of "how much" and/or "how fast".". He argues that this is only *one* of several possible perspectives, which is moreover often taken for granted. Säljö continues to say ".... that there are alternative ways of conceptualizing the phenomenon of learning leading to different approaches in empirical research.".

According to Säljö the difference in learning conception c.q. learning activity between novices (inexperienced learners) and experts (experienced learners) cannot be described in quantitative terms. This conclusion has also been drawn by researchers studying *novice* versus *expert* behaviour/thinking. Elshout (1984) notes about this: "By hindsight the conclusion, that in the laboratory merely a quantitative difference existed between experts and ordinary people, was premature.". Elshout points in this context to the existence of a "uniformity hypothesis" ("more of the same") that according to him, also in view of its reassuring character, still exerts a lot of influence on scientific and everyday thinking: "The uniformity hypothesis says that a novice is as it were an almost empty expert: basically an expert, but one who has far too little of everything considered important.". His own view on this, which is in keeping with our view on the difference "novice learner - expert learner", is illustrated by: "That would mean that it should be possible to quite simply make a novice system, just by simplifying the expert systems mentioned previously. *In practice that is however not at all the case.*" (italicized by van Rossum and Hamer).

Elshout views the difference novice - expert more as a relative than as an absolute datum: "....that "novice" is no absolute point on a scale. "Novice" is everybody with whom it is meaningful to compare the expert, so as to spot his expertise more easily by contrast.". Moreover he is of opinion that from comparisons between novices and experts it shows that it boils down to an almost universal phenomenon. To give an impression of the nature of this difference we give here Elshout's description of novice behaviour and expert behaviour.

1. *Novice level*: "A notable quality of novices (....) is that they attack the calculating immediately. No sketch is made, no data jotted down, the problem isn't analysed, it seems to be of utmost importance to find the correct answer *immediately*."
2. *Expert level*: "On real expert level - after years of practice - the information bits that can be handled effortlessly, undoubtedly have become larger, so that it sometimes seems as if there's no thought process going on at all. The latter however is only on the surface. On this level of expertise there just isn't that much to think about: the elaborate, deliberative, step-by-step approach only returns when difficulties occur.".

Finally Elshout enters into the exact nature and explicitly the origins of novice behaviour. A typical feature of this type of behaviour, in what field whatsoever, is the "compulsion to answer". Elshout mentions a number of "causes" of this behaviour pattern of which in our opinion the first mentioned is the most important: the quality of education. He and also others, have remarked about secondary education, that it is lop-sidedly answer-aimed and also that the quick and correct reproduction of "bookish", as *truth* presented, knowledge is very much emphasised and rewarded. It is therefore not surprising that we (van Rossum and Schenk, 1984; van Rossum and Deijkers, 1984) found in groups of first-year students, that most students, in particular those who came directly from secondary education, had a fundamentally reproductive learning conception.

Education is in our opinion not the only "guilty party". In society as a whole a lot of examples of reproductive (answer- and knowledge-aimed) thinking and behaviour patterns can be found, these are often even cultivated. The purpose of this article however is to connect very directly the current, above mentioned, status quo in secondary and also tertiary education with our own research into the field of learning conceptions and the research into the differences in behaviour/thinking between novices and experts, recently focussed on so much. The latter mentioned research field is extending rapidly and covers many areas of life, like the thinking of managers, teachers, chess-players, problem solvers, etc.. Remarkable is that often a distinction (deep versus surface strategies) emerges, which is also characteristic for the most fundamental dichotomy within 'our' area of learning conceptions and study strategies. The relationship between study strategies and behaviour in problem solving tasks has already been elaborated by Marton (1983, p. 5-13). According to him a deep-level approach is equivalent to the problem solving strategy "... keeping the end-point in mind throughout the solution process." and a surface-level approach is equivalent to the strategy "... concentrating only on procedures (in performing a task: using formulae, calculations, figures in tackling problems).".

The present Study

The present study was meant to delimit the differences between novice learners and expert learners more precisely. To gain more insight into the nature of these differences we have formulated a number of open questions, that have a bearing on concepts of which the meaning is often taken for granted within the educational context. The concepts in question are, next to learning, concepts like (good) teaching, knowledge, understanding/comprehension, insight, use/application of knowledge and the distinction *active* versus *passive* learning. The questions were derived from group discussions among students and drawn up with the intent to trace in which ways novice learners (defined here as subjects with learning conception 1: the acquisition of knowledge) differ in their thinking about learning, etc. and their behaviour in learning situations from expert learners (defined here as subjects with learning conception 5: understanding reality). We mean to clarify as much as possible these differences by means of quoting the answers of two prototypical or ideal subjects (one of each category) to each question (with a total of eight), and comparing them. Where we see fit, answers of other subjects of the same category shall also be quoted. However we will always indicate this clearly.

Method

Subjects

Participants in this study were 42 Arts students, who were in the first or second year of their study.

Procedure

The above mentioned subjects participated in small groups. They were allowed to take as much time as they wanted for answering, in writing , the open questions. The time required varied from a little less than one hour to up to somewhat over two hours. A short briefing preceded the answering of the questions, as to clarify the aim of the study and to ask the subjects to answer each question as seriously and completely as possible.

Results

Categorised by their learning conception the 42 subjects were distributed over the again discerned five categories of Säljö in the following fashion:

learning conception	1	2	3	4	5	total
n	4	7	10	13	8	42
%	10	17	24	31	19	101

Tabel 1: The distribution of the subjects over the learning conceptions
(101% is a result of the rounding off of the percentages)

As said above the answers of the two ideal subjects will now be compared. A more complete analysis of the answers of all subjects can be found in an article which shall soon be published in Higher Education (van Rossum et al.,1985).
The novice learner shall be indicated by "N", the expert learner by "E". Each set of answers is preceded by a shortened version of the appropriate question and followed by a short interpretation and conclusion. Because of limited space questions 5 and 7 will be very briefly treated.
About the person of our ideal subjects the following data can be given: our novice learner is female, 18 years of age and has as previous schooling "Atheneum" which is preparatory academic education, our expert learner is male, 22 years old and has "VWO" as previous education, which is also preparatory academic education. He specifies he has done the humanities branch of this type of school. It is interesting to note that the subjects do not differ from each other concerning the level of their previous education.

Question 1: What do you mean by LEARNING?

N answer

Learning means to me to come to know all kinds of things and by learning I do not only mean learning from a book. Learning at school means to me going to the lectures, elaborating my notes and doing the appropriate parts from the book, which are all three forms of learning to me (I couldn't miss any of them). With my learning activities I hope to conclude my studies with success, after which I (hopefully) will be able to put my theories into practice. If in future this may not be the case, then, I am already now convinced, I will continue learning (maybe a different subject) because I simply can't bear the feeling of doing nothing (I even have this after a holiday).

E answer

I mean by learning the acquisition of knowledge and experience . This isn't important because maybe you can profit from it some day by getting a well-paid job, but it is in the sense of being able to develop your way of thinking and your actions in such a way that it benefits your personality.
Keeping this in mind, learning doesn't stop at learning facts, opinions, events, etc. by heart. This knowledge you can also acquire by exploring the matter as you go along. At short range, it may well mean that maybe you know less things more or less precisely, but in the long run I feel it will become evident that the knowledge sticks much longer and is more usable. (....)

In the first answer learning is described rather vaguely and is primarily seen as enlargement of knowledge: learning is something "taken for granted" (Säljö, 1979 b). The second answer clearly indicates that learning is something to think about: it has become "thematic" (Säljö, 1979 b). In this answer the personal development is of utmost importance.

Question 2: What do you mean by (GOOD) TEACHING?

N answer

Good teaching means to me that a teacher explains the subject-matter set well, that he e.g. gives examples or a simplified explanation, that he treats the students' questions (in such a way that afterwards the subject-matter really is clear) and that he has a look at the questions or assignments from the book, so that (if you didn't understand it at first) everything is clear after his explanation (if this is not the case, your own questions weren't right). (.....)
This may not be such a correct way of teaching, but it started like this at secondary school and I am glad that here they teach in quite the same way.

E answer

Good teaching means as much students' self-activity as possible. The teacher's task should largely be found in guidance, co-operating, stimulating. Good teaching means very little emphasis on marks as goal in itself. Marks are only functional as a graduator for the student.
Good teaching means doing seminars, projects, and as few lectures as possible.

The first answer clearly speaks of the novice conferring a very directing role upon the teacher: the teacher should structure and interpret the subject-matter so, that for the student everything becomes clear. In the answer of the expert the teacher plays a completely different part: the student wants to be independent, autonomous, and the teacher blends into the background. Novices sometimes position themselves very dependent: "I prefer a teacher who explains well, what I must or want to know.".

Experts on the other hand can be very critical: "Good teaching is such that it explicitly shows its limits.". They could have acquired this attitude in secondary education: "I have followed Montessori-education, and I think it's ideal...... That's why I was rather disappointed at the start of this study. The teacher stands in most cases in front of the class, but also opposite to the class, and not in or together with the class.".

Question 3: To what exent/in which way is your study behaviour influenced by the type of question (knowledge or insight question; multiple choice or essay question) you expect?

N answer

It is clear that, when you know that only knowledge questions will be asked, you then learn everything by heart ("drum into one's head") with the consequence that it sticks for about two days and that after that you have forgotten it all again (with me this is usually the case). In my case I do keep in mind the type of question I expect, but I don't study differently because of it, because I think you need knowledge and insight anyhow when you take your exam. When I prepare for an exam (which is the first time so I don't know whether my theory works out) then I start studying three or four weeks beforehand (reading the subject-matter treated intensively) and a few days before the exam I learn concepts, etc. by heart.

E answer

As I feel it the concept knowledge question has two aspects/meanings:
knowledge question in the sense of 'coughing up' what is said in the books or what the teacher has said; without thinking about whether or not all that knowledge is correct, relevant, etc. and
knowledge question in the sense of testing the insight that a student has in the nature and function of the knowledge that he has acquired.
The latter aspect more or less overlaps with the concept insight question.
What I want to say is: knowledge and insight are the sides of the same coin.
The one can't exist without the other.
When preparing for a test logically I only take insight questions, in the conventional sense, into account. Should I however be confronted with a knowledge question, in the conventional sense (consequently a bad question), I shall answer that question as if it were an insight question: consequently not only giving the required knowledge, but also my criticism, doubts, arguments-pro, arguments - contra, etc. It shows that you can get quite far this way even if you don't master the required knowledge perfectly.

It's remarkable that both subjects seem to take only one type of question into consideration. The reasons for this (as well as the nature of the choices made) are however different: in our opinion a novice CAN only take one type of question (knowledge) into account, while an expert on the other hand consciously chooses for a specific type of question (in this case insight), in answer to for instance the perceived study context. Sometimes experts express their doubts about the very concept 'insight question' :"An insight question is a beautiful term, but alas for us it sometimes boils down to yourself reproducing at an exam what the teacher has conveyed to you as being insight in a text.". The following statement of an expert: "Sometimes almost nothing can be learned when insight questions are expected, in that case I only look for the essential links....., the rest follows naturally from this." corresponds in our opinion with Elshout's (1984) remark that on an expert level it sometimes seems no thought process takes place at all.

Question 4: What do you mean by "understanding a text", "insight into the subject-matter"?

N answer

I think that I have understood a text, when I know what the text is about, what purpose it has, how the text is constructed , in short when I have "understood" some aspects of the text. (This is mainly on account of the course "linguistic skill (Dutch)", which we have had.). So I have understood a text when for me there are no difficulties left in it and when I then can make this text clear to somebody else.

E answer

You probably have understood a text well when you can rephrase the content, the purport of the text rather easily in your own words, when you can support resp. oppose it with your own examples, when you can give a personal opinion about the clearness, the correctness, etc. of the text, when you can include the content and the purport in your own argumentations.

The novice conceives "understanding" rather recountive and unpersonal/'technical': to understand something is to "know everything pat". The understanding of the expert on the contrary is a constructive and personal process aimed at the information in its entirety. Other novices conceive understanding as the ability to reproduce the main points (e.g. per paragraph), a sort of 'selective reproduction':"I think I have understood a text when I can reproduce the text in my own words and then touch the core of the matter and leave out the superfluous parts.". The same subject continues:"The same goes for the understanding of subject-matter. Understanding the subject-matter and learning the subject-matter are two completely different things. You can actually learn something without understanding it.".

Question 5: To what extent/in which way does "interest" influence your study process?

From the answers of all of the novices it becomes clear that interest has predominantly a positive influence on the amount of ease with which the subject-matter can be committed to memory/reproduced. In the case of the expert subjects, interest can also lead to a *qualitatively* different study process. This becomes very evident in the next quotation: "When I study a text on a subject of interest to me, I can often relate the data to knowledge I already posess, and that makes it even more intriguing; it is continuously comparing with my data, comparing of attitudes, opinions, etc.. Often it is more recognizing than taking cognizance of.". In our opinion the latter suggests again that experts are more capable, in a qualitative sense, of taking different demands from the study context into account.

Question 6: What do you mean by "(being able) to use/apply what you have learned"?

N answer

Applying means also being able to use in practice what you have learned. When for example you know a mathematical formula (by heart) and you can't apply it in an exercise, then this formula is useless to you. In the past few months I have found out that for me this is one of the most difficult things, (.....). This is the most difficult part of learning for me, because I'm too much inclined to state my own view instead of the one from the book.

E answer

I think "applying" is the only criterion for having learned something. If you can't apply it (and here applying doesn't mean correctly answering the knowledge questions (in conventional sense) at an exam), you haven't learned anything. Being able to apply means having understood it well. In that sense applying contains among other things that which I spoke of under question 4.

The novice sees applying as a) "the ability of doing sums" and b) experiences it as problematic (see also the beginning of the discussion). Sometimes a novice can in his/her answer seem to be very absolutistic: "Applying makes me think of comparing what is learned to reality. To see whether "it is really so".". From the answer of the expert a more constructive approach emerges. This becomes particularly evident in (parts of) the answer of another expert: "Using your knowledge in a way which isn't reproducing, but problem solving.". Novices see "applying" rather algorithmically, experts on the other hand see it as a more heuristical activity.

Question 7: How do you normally study an argumentative text?

The answers of novices all boil down to the ability to extract from the text and to retain the "main points", " key words" (surface-level processing, van Rossum and Schenk, 198). However between novices there seems to be a difference in the level of analysis (e.g. sentence, paragraph, chapter) one works upon. All these answers are "only" recountive/atomistic, that is to say they miss an overall view, they aren't integrated:"..... Then I try to extract the main points per paragraph....". The answers of the experts are in contrast examples of deep-level processing (van Rossum and Schenk, 1984). Characteristics of these answers are (Marton, 1983): 1) a directedness at the intention of the author/ the treated phenomenon, 2) a perceiving of internal and external relationships (a holistic approach) and 3) a creative and critical approach.

Question 8: What do you mean by the distinction *active learning* versus *passive learning?*

N answer

By active learning I mean the studying of a text when I'm consciously working on it. (.......) Then [with passive learning] it often is so that I can't concentrate and work on the text for even 5 minutes. Then I walk about a bit, or do a bit of drawing: that's passive learning to me. Then I usually don't take in anything from the text, but for this I have to sit down and study at some other time.

E answer

I think I've made this distinction implicit in what preceded.

Active learning: to critically take note of things, to doubt them, to slate them, to applaud them. However everything with arguments, with justification.

Passive learning: knowledge, oh well knowledge: knowing what is said in the book or by the teacher.

For the novice the distinction boils down to the difference between *active surface learning* and *passive surface learning* (Fransson, 1977). The answers of the novices display a striking similarity: the distinction active versus passive learning is seen by them as primarily a difference between "intentional learning (in particular thoroughly, exam-aimed)" and "incidental learning ("by accident","everyday")" or even "learning nothing". The expert views, like most of the other experts, the distinction in a very different light: the answer quoted here boils down to a difference between deep-level processing and surface-level processing. Sometimes the experts in this case place two types of deep-level processing opposite to each other: an active type (like the one quoted above in the E answer as active learning) and a passive type ('only' aimed at following passively for instance the argumentation(s) in a text).

Discussion

Rothkrantz (1984, see also Results, question 6, above) remarks, in connection with a study counseling-experiment done at the Technical University Delft: "The teachers noticed that studying, for most students, boils down to the ability to do sums. The expectation that students would discover the connection between things themselves did not bear out. The self-structuring of the subject-matter should be stimulated more in education." (Rothkrantz, 1984, p. 11). This observation concerned in particular a group of first-year mathematics students (21 of a total of 57) who had run into trouble in the beginning of their study. This is clearly in keeping with our findings in the domain of learning conceptions. As has been brought out earlier in this article first-year students, particularly those fresh from secondary education, view learning primarily as a reproductive, impersonal, self-evident phenomenon, over which they cannot or will not exercize any control themselves. Or in Elshout's terminology, the secondary schools turn out a lot of novices.

In our opinion it isn't correct to see learning conceptions, novice-expert behaviour and thinking, etc. in terms of stable individual characteristics. The latter displays a way of thinking which is traditionally followed in psychology, but in our opinion doesn't carry educational psychology one step further. We feel that learning should be studied in connection to the context within which it takes place. Learning is in Säljö's opinion "man-made", just like education as a whole, and both should preferably be conceived "..as social constructions mirroring traditions and negotiations of the past." (Säljö, 1983, p. 4). Moreover we think that up till now not enough attention has been given to the developmental dimension of human behaviour. This dimension has been brought forward in for instance the model of *the reflective human being* (Eckensberger, 1979): E(nvironment)⇄I(ndividual); the "⇄" stands for the relationship between individual and environment as origin of development and change. Another example of developmental thinking is Perry's work (Perry, 1970).

Keeping these considerations in mind we have tried to make an inventory of the dimensions on which novices can be distinguished from experts. In this way we try to provide a tool, which may aid the clarification of the task of stimulating the development from novice learner to expert learner in tertiary education. In our opinion qualitative differences between novices and experts exist on the following five, sometimes overlapping, dimensions (seen from the viewpoint of an expert):

- autonomy: the self-directing and the self-determining of one's own study behaviour, from a personal point of view.
- problem directed orientation: a constructive way of using knowledge to answer one's own questions, c.q. to solve posed problems.
- reflectivity: the thinking about, the critically following, c.q. questioning of (the influences upon) one's own learning activities and conceptions.
- holistic approach: the perceiving of the (relationships between the) parts from a "higher", integrative viewpoint.

- flexibility: a proper way of taking into account the qualitatively different demands from the study context.

To further the development of students with regard to the above mentioned dimensions, tertiary education should, more than is now customary, give ample facilities in its schooling for *open teaching styles* (van Rossum and Deijkers, 1984). This shall however undoubtedly lead to all sorts of feelings of frustration for many apprentice, reproductively thinking, students. A possible alternative model of education that may offer a way out of this delicate situation can, we think, be described in the following way: as schooling progresses (at the moment nominally four years) the control of teachers over the teaching-learning process should be gradually diminished, while at the same time students should accept more and more responsibility for their own learning process. In this way, we feel, the result of university teaching would be more *expert learners!*

Note from the authors: We take complete responsibility for the translation of the quotes from Dutch authors and the subjects.

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AN INQUIRY INTO THE CONCEPTION OF FIRST-YEAR UNIVERSITY STUDENTS OF SOME PSYCHOLOGICAL TOPICS

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1. Introduction

1.1. Assessment of the quality learning (= understanding)

Recently we made a plea for testing of understanding of course content in higher education (Wijffels, 1982). We think teachers should intend to make students understand and comprehend meaningful contents by fitting teaching methods and testing student's learning at, so called, higher intellectual levels. Hereby is meant that students should be able to do more than simply recall data by memory. This means that the development of thinking abilities ought to be one of our educational goals, as advocated by Peel (1971) and Cronbrach (1977).

However, the mere profession of this educational goal is not sufficient, we need, as Gray (1972) pointed out, an effective implementation of this goal in the curriculum and the teaching-learning process. Part of this implementation consists in the use of qualitative evaluation methods of learning outcomes. Educators need not only to evaluate how much has been learned, but also how well it has been learned. As Biggs & Collis (1982) state, it is a difficult thing to define and measure. They claim, however, to have found a clue for defining the quality of learning. They state that it is the structural organization which discriminates well learned from poorly learned material, somehow in the same way as mature thought is distinguishable from immature thought. They believe that there are "natural" stages in the growth of learning and that in certain important respects these stages are similar to, but not identical with the development stages in thinking, as described by Piaget and his co-workers (e.g. Ginsburg & Opper, 1979; Piaget, 1950). Biggs & Collis (1982) present their SOLO-taxonomy as a criterion-referenced measure of the quality of learning, namely a measure of the complexity of the Structure of Observed Learning Outcomes. They distinguish five levels in student responses:

Schema 1. SOLO-taxonomy

PIAGET'S STAGES	SOLO-DESCRIPTION
- Formal operations	A. EXTENDED ABSTRACT relevant data + interrelations - hypotheses
- Concrete generalization	B. RELATIONAL relevant data + interrelations
- Middle concrete	C. MULTISTRUCTURAL isolated relevant data
- Early concrete	D. UNI-STRUCTURAL one relevant datum
- Pre-operational	E. PRE-STRUCTURAL no answer, a tautology or nonsense

They insist that these levels are meant as characteristics of the quality of responses (attainment) and not any developmental stage of people with some hypothetical ability of cognitive structure (like the IQ), although the formulation was inspired by the development stages of Piaget. A person's developmental stage might be conceived as the upper limit of functioning, but his ultimate attainment (actual performance) depends on other factors in addition to ability: his intentions, motivation, learning strategy, prior knowledge of that particular task, item wording, his state of emotional arousal, allowed time to answer, individual instruction. This means that university students, who could generally be expected to give responses at the extented abstract level can very well give responses of lower levels for the reasons mentioned above - and the actually do so.

Biggs & Collis (1982) stand in the tradition of Peel (1971, 1972) who studied the nature of adolescent judgement and the assessing of their understanding of school material. In this effort to categorize the obtained answers, Peel (1971) considers crucial the distinction between describing and explaining. The transition from content-dominated to possibility-invoking answers seems, according to Peel, to be a characteristic of early- and mid-adolescent thinking (he refers to Inhelder and Piaget, 1958 and Peel, 1962). Peel comes to three basic categories of understanding:

1. the restricted level: tautological, premise-delaying, denying conditions of the problem, irrelevant;
2. the circumstantial level: dominated by the content of the material with no look outside it;
3. the imaginative-comprehensive level, going beyond the content, invoking independent ideas and possible hypotheses.

Finer subdivisions have been recognized by Peel (1971), Da Silva (1972), Wells (1972) and Sutherland (1982).

Wijffels (1982) who argued for the reduction of educational goals to two fundamental levels, insists on the basic distinction between understanding and factual recall (memory), which seems analogous to that of Peels' describing-explaining distinction.

The distinction between knowing and understanding is mirorred in our practical expectations, e.g. those in the teaching situation. To say the least, we tend to value quite differently the kind of intellectual achievement, consisting in reproduction of study materials as contrasted with the achievement represented by a creative use of the acquired knowledge, the latter we often refer to as a matter of understanding. De Gelder (1981 and this volume) analyses our intuitive expectations about intellectual achievements and mastery of a domain of knowledge. In the course of doing so the relevance of the distinction between knowledge and understanding not only for practice by also for our theory of knowledge acquisition, should come out clearly. Without the recognition of this distinction and without the instrumentation for assessing the quality of understanding, the assessment of school materials will be impossible and examinations will be restricted to the testing of knowledge. This is exactly the standpoint of Ebel, who denies this distinction and considers the efforts to measure the so called higher intellectual skills as unsuccessful and useless. In the Netherlands Van Naerssen (1980) and Hofstee (1973) have joined Ebels disapproval because they came to the conclusion that only such items have been made that these questions mainly test the intelligence of the students and not whether they worked hard. For this reason they consider them as unwanted, probably because of the association with unalterable, fixed characteristics of students (by heridity or moulded by early socio-economic environment), what makes such procedures unfair to students. It is exactly at this point that Wijffels (1982) riposted by reformulating the problem of testing the understanding of teached materials as a procedure analogous to the testing of intelligence, namely of the intelligent functioning on specific course material. A very "culture loaded intelligence test", in terms of Jensen (1970), is needed. The intelligent functioning of a student must be conceived as an actual level of performing, co-determined by heridity factors, maturation and past experience and education in the past, and by factors in the actual situation. Conceived in this way it is no longer unfair and even required to measure this level in students. In general we can say that a better understanding of what intelligence actually means - as reasonably can be expected from the evolution of (cognitive) psychology (see Resnick, 1976 and Sternberg, 1981, 1982) - should lead to the possibility of constructing better school achievement tests about understanding learned materials. The work of Biggs & Collis (1982) and Peel (1972) can be seen as such an application of Piaget's insight in the nature and development of the intelligence. The development of understanding of a certain topic or domain is rather specific and depends on many factors other than intellectual ability. One of these factors can be found in the learning strategy and the learning conception of students. This will be commented on in the next paragraph.

1.2. The learners' perspective

Learning outcomes are determined by many factors, as capacity, situation and the students' conception, which are all more or less alterable (as labelled by Bloom, 1979) and therefore more or less open to the improvement of learning. The behavioristic approach in education has always stressed the importance of the manipulation of situational variables. A more humanistic-phenomenological approach (e.g. of Rogers, 1969) or cognitivistic-constructivistic approach (e.g. of Kelly, 1959) lays more stress on the conceptions (constructs) and beliefs of students as a determining and alterable factor (for a presentation of these different approaches see e.g. Hilgard c.s., 1979; Leahey, 1980; Van Parreren & Van der Bend, 1979). This approach has been adopted by the Gothenburg group (Marton, Såljö and Svensson e.g.) and the Study Methods Group of the Open University U.K. (like Gibbs, Morgan and Taylor). Gibbs (1981) speaks of a student-centered approach in giving attention to his beliefs, and his ways of seeing the world, to the development of such constructions or how they can be influenced. The learners' perspective is to be taken into account. Here can be noticed a striking parallel with Fenstermacher (1978) and Olson (1982), who underline the importance of influencing the teachers' conceptions about their role as a teacher, for teacher training programs and for the implementation of educational innovations. It is as it were, as if we are discovering the learners' perspective and the teachers' perspective, that we realize that conceptions and beliefs are important, alterable factors. This cognitivistic, humanistic and phenomenological approach is not only more "human", but also more effective in arranging an optimal teaching-learning situation. This last remark is meant for those who consider the respect for persons and their conceptions - an ethical basis for any education - not a meaningful term in educational research, and look for more efficient ways of spending money in education (being a praisable perspective in our view).

Gibbs (1981) has summarized the relevant literature about the relations between learner conceptions, strategies and levels of understanding, and discusses how students do develop as learners. He presents, as a framework, the studies of the Gothenburg group, and we will summarize his presentation. In both experimental studies (e.g. Marton and Såljö, 1976a) and research within the context of everyday studying (e.g. Svensson, 1976, 1977) qualitatively different levels of approach, labelled "surface and deep approach" (or "holistic and atomistic") have been demonstrated. Mathias (1981) identified two general "types" of approach to learning, nameley that of "course focused" and that of "interest focused" students. The first stick to the syllabus and what is needed for the exams and only come to the University for getting a degree. The second would try to read more about it and possibly go to see the tutor. Do we have to do here with some typology of students and some relatively consistent student characteristics? The answer is yes and no, or better: yes, buth stressing the word relatively. This topic has been studied by Svensson (1977), Laurillard (1979 and Såljö (1979c).

Entwistle (1979) indicates as the fundamental dilemma in many analysis of thinking processes - labelling students' learning styles and strategies - the apparent contradiction between categorizing people in terms of relatively stable individual differences and the evidence of task specificity.

He warns against over-simplifications and suggests that we should learn to conceive thinking (and persons) as simultaneously showing consistency (personality traits, types) and variability (situation adapted). To the point of situational dependence we may add that persons, and even animals, do not react to some objectively given stimuli, but always to their perception of their environment, being an interpretation of these (see Von Uexküll, 1909, 1934, Woordworth & Marquis, 1959 and Lewin, 1935,Merleau-Ponty,1945

The importance of learning approaches for the level of outcomes (learning results) is demonstrated by Marton & Säljö (1976) and Svensson (1976, 1977): deep or holistic approach correlates with qualitatively higher levels of understanding of texts and learning materials. This relationship has been confirmed by Van Rossum & Schenk (1983). It seems to us that the Gothenburg group implicates some causal relation between approach and outcome, and although this seems reasonable to believe, only coherent phenomena have been described (as probably was the only intention of the group).

Säljö (1978, 1979b) studied the question of what underlies a students' approach to learning and discovered differences in the way students conceptualize learning. Säljö finally found that the answers of students revealed five rather different conceptions. These conceptions are given in schema 2.

Schema 2. Learning conceptions (Säljö, 1979a)

Conception 1 : "Learning as the increase of knowledge"
Conception 2 : "Learning as memorizing"
Conception 3 : "Learning as the acquisition of facts, procedures etc., which can be retained and/or utilized in practice"
Conception 4 : "Learning as the abstraction of meaning"
Conception 5 : "Learning as an interpretative process aimed at the understanding of reality"

Gibbs (1981) notices that it seems that the qualitative differences between conception 2 and 3 on one hand, and 4 and 5 on the other hand, are very similar to the distinction between surface and deep level of approach to learning, and that such conceptions underly the strategies (the last point is also emphasized by Perry, 1970).

We think that, by making these distinctions, Säljö is in fact describing a sort of typology of students (pointing to individual differences). Of course many typologies can be mentioned (see e.g. Lacante, 1982 and Pervin, 1975), but only those which are relevant for the optimalization of the teaching/learning situation should be used. In such a typology should also appear a society-orientated type of students who critically question the "truth" and the use of knowledge, next to content- or profession-orientated students (see Perry, 1970, Castoriadis & Chabrol, 1979 and Van Outrive, 1967).

2. PROBLEM

The aim of this study is whether it is possible to identify and describe different levels of understanding, using the SOLO-taxonomy of Biggs & Collis (1982), their relation to learning conceptions (as identified by Säljö, 1979a) and eventual changes over time. So the following three questions have been formulated:

1. What is the quality of the conception of first-year university students of some psychological topics?
2. Do these conceptions change after receiving several months of instruction in psychology?
3. Is there a relation between the level of these answers (learning outcomes) and the level of their conceptions about what learning actually means to them (learning conception)?

3. METHOD

3.1. Procedure

A. First year

To investigate the first two questions, a pretest, at the beginning (first week) of the study, and a post-test, both during a half-hour interruption of lecturing, is given to the students. The pretest was taken in September 1981, the post-test in January 1982. The students have been asked to answer three question in about 40 words. The questions are:

1."Wherein consists, according to you, a psychological explanation?"
2."Indicate shortly and clearly the differences you see between a psychiatrist and a psychologist."
3."What sense does it make for a psychologist to study animals?"

These questions have been chosen, because we think we are able to release some general notions students have about psychology, by not entering into technical questions. This seems to be required in any case at the start of the study, later they may have acquired some more technical conceptions about psychology. In the pretest 130 students responded voluntarily and anonymously, in the post-test 89 students (then indicating their names).

The level of the learning conceptions has been determined in collaboration with assisting students (see Acknowledgements), who studied this topic under the first-year students of psychology.

B. Interviews

As can be seen in the conclusions of the results of the first year, the lack of correlation with learning conceptions led us to the decision to take interviews with some of the students (n=10) at the end of the year (June 1982). They were invited, without telling them that we intended to question them about chapters of the handbook of Leahey (1980) , read 9 months before Conflicting approaches in psychology are treated in this book .

C. Second year

This year we decided - in order to obtain higher levels of answers - to question the students about course materials (Leahey, 1980) and with a more detailed question, as part of an examination (after two months study). The question is:"What sense does it make for psychology to study animals? Give arguments as you would expect them from a behavioristic and cognitivistic psychologist."

The answers of 138 students and the learning conceptions of 37 of them were analysed in the same way as the first year.

3.2. Qualitative analysis of students' conceptions

The levels of students' conceptions of the psychological topics under study (see questions under 3.1.procedure) have been identified by means of the SOLO-taxonomy of Biggs & Collis (1982) - see schema 1. Students' conceptions of the learning task have been described according to Säljö (1979a - see schema 2) by posing the question: "What do you actually mean by learning?"

4. RESULTS

A. First year

The levels of the answers of the first year (81/82) in pre- and post-test are presented in table 1.

Table 1. Levels of three answers in pre- and post-test (81/82) in %.

Level	1. % pre	% post	2. % pre	% post	3. % pre	% post
e (low)	30	25	17	23	3	7
d	30	36	62	49	49	57
c	41	38	20	28	46	36
b		1	1		2	
a (high)						
N	130	75	120	75	120	75
mean: d=2)	2,11	2,14	2,05	2,05	2,45	2,29

These results show that the students show no understanding in the sense of the Biggs SOLO-taxonomy: they do not indicate interrelations of relevant data (level b), nor possible explanations of them (level a). They show also no improvement in this respect after four months of studying psychology (Chi-squares of the three questions are consecutively 0,95 with 2 df, 3,2 with 2 df, 2,9 with 1df). Students know either nothing, one item or some isolated relevant data. Further knowledge of one topic is unrelated to that of other topics in the post-test (correlations of .08, - .02 and .16, N=75).

In the post-test the levels of the answers show also no significant relation with levels of learning conceptions (Chi-squares of the three questions are consecutively: 15,60 with 12df, 7,76 with 8df, 10,67 with 8df). For one question, namely the first about the psychological explanation, an almost significant relation however was found with a teacher "grade" (indicating good and bad answers: Chi-square of 6,48 with 3df, associated probability of 4,5% one-tailed).

The interrater reliability for the 3 questions in the post-test can be expressed by the intercorrelations of resp. .58, .62 and .38.

B. Interviews

The answers of 10 students about three chapters of the book "A history of psychology" (Leahey, 1980) could be classified into three categories: low (L), medium (M) and high (H). In table 2. the relation between levels of learning conceptions and qualitative levels of the interview data is presented.

Table 2. Relation between learning conceptions and qualitative level of interview data

Level \ learning conceptions	1 (low)	2	3	4	5 (high)	
Low	1	2	2			5
Medium			1	1	1	3
High				1	1	2
	1	2	3	2	2	10

As can be seen, students with low learning conceptions (1 or 2) give only answers of low level.

C. Second year

The relation between the learning conception and the learning outcomes is presented in table 3. The relation between learning conception and teacher grades, and between SOLO-level and teacher grades are presented in tables 4 and 5.

Table 3. Relation between
learning conception
and SOLO-level (82/83)

SOLO-Level	Learning conception 1	2	3	4	5	
e		1				1
d	1	6	3	2		12
c	2	4	5	8	2	21
b				1	2	3
a						0
	2	11	8	11	4	37

Table 4. Relation between learning conceptio
and teacher grades (82/83)

Learning concept. / Teacher grades	0	1	2	3	4	5	6	7	8	9	
1							2	1			3
2	1			1	2	2	4		1		11
3					1	1	3	2	1		8
4						2	2	3	4		11
5							1	1	2		4
	1	0	0	1	3	5	12	7	8	0	37

Table 5. Relation between SOLO-level and teacher grades (82/83)

SOLO-level	Teacher grades 0	1	2	3	4	5	6	7	8	9	
e	1			2							3
d				3	9	20	24	4			60
c					1	4	29	21	12		67
b								1	6	1	8
a											0
	1	0	0	5	10	24	53	26	18	1	138

As can be seen, a slight relation is found between the learning conception and the SOLO-level and a more clear relation between learning conception and the teacher grades. Finally the most clear relation appears between the SOLO-level and the teacher grades. Statistically this can be expressed in Chi-square values of reduced data of 3,77, 5,43 (critical value of 3,83 at 2,5% for 4 df) and 52,5 (critical value 9,21 at 0,5% for 2df). The interrater reliability, finally, for the assessment of the question posed in the second year is .36 (n=138).

5. DISCUSSION

A. Level of answers

Biggs & Collis (1982) and Peel (1971) mention several factors that can intervene in determining the level of answers. Shortly stated these are: 1. familiarity with the subject, 2. motivation for responding and 3. structure of the question (item wording).

In the first year the topics, students were questioned about, have not been taught. Secondly, the students gave their answers during an half-our interruption between two lectures. Finally they were not urged to explain their answers.

In the interview situation students were questioned about learned materials, in a personal contact situation and were asked to explain their answers (in terms of "why do you say so" etc. ; Peel,1971 and Biggs & Collis, 1982 always use a "why"-question). We think an amelioration in the three mentioned factors is responsible for the better quality of the answers in the interview situation.

In the second year better levels of answers have been obtained than in the first year, as can be shown in the comparison with the third question of the first year. These questions are comparable because they ask about the sense of animal psychology. The Chi-square value is 6,5 with 1df and significant at 2,5% (critical value= 3.8). This result can be understood because students answered during an examination, so they can be supposed to have studied the topic and to be well motivated. Finally the question asked for arguing from two opposed standpoints (is better structured).

As a conclusion we can say that higher levels of answers have been found in students when they are questioned about more familiar materials, under higher motivation (examination situation, personal contact, active involvement) and with better structured questions (e.g. including conflicting elements). A practical variant of this conclusion can be that if students give rather poor answers, of a describing and factual level, this can be due to the way teachers question them. For this effect of item wording, see also Best (1967).

B. Relations

The absence of relations in the first year could be explained in the following way. Although a reasonable variation in the learning conception exists (in the post-test), the range of variability of the answers is restricted to three levels, which reduces the possibility of any relation with another variable. But more fundamentally is the fact that students do not pass the frontier between knowledge (describing) level and understanding (explainer) level. In the *interview situation* some relation is suggested between the variables under study. In the data of *the second year* a confirmation of the findings of the Gothenburg group is found, namely a correlation between levels of answers, learning conceptions and teacher grades (more or less significant). We conceive this result as a description of an interrelated phenomenon. Although some causal relationship between learning conceptions and outcomes, by intermediate learning strategies, seems plausible (for a cognitivistic psychologist) this has not been proved. An experimental approach is required to do so (Cook & Campbell, 1979) and by preference in actual learning situations with the use of qualitative assessment methods.

C. The SOLO-taxonomy

The obtained relation between levels of answers, as established with the SOLO-taxonomy, with teacher grades is an indication of the validity of this instrument. Conceptually this instrument can be considered as a valid educational assessment instrument, because it urges teachers to define the minimal features of relational or extended abstract answers (proving some real understanding of the material), leaving room for new and creative answers.

The observed interrater reliabilities in our study are not as high as those mentioned by Peel (1971) and Biggs & Collis (1982), namely between .70 and .98. This can be due to a difference in procedure in the sense that we did not define in advance content criteria for the levels, and that some common sense conceptions have been questioned here and not strictly taught materials. Finally we did not have sufficient experience with this evaluation instrument.

After all we think that the SOLO-taxonomy is an empirically and conceptually valid instrument for assessing the quality of learning, that can be used in a reliable way, after some experience.

ACKNOWLEDGEMENTS

We like to thank J. Schenk en J. van Dommelen (students of the department of Educational Psychology of the Faculty of Psychology of Tilburg - KHT) for their collaboration in determining the levels of students' learning conceptions.

NEW APPROACHES TO CURRICULUM DEVELOPMENT

WEDNESDAY, 3 JULY

1330 - 1500

THE IMPACT OF DECENTRALIZED PLANNING FOR CURRICULUM DEVELOPMENT AT TWO-YEAR COLLEGES

Aaron Donsky
Roger A. Fazzone
Arthur Pritchard

INTRODUCTION

During the recent past, many colleges used planning for the development of new programs and expanded services. The major financial supports for these efforts were the tuition dollars generated by increased enrollments. It became relatively easy to develop curricula that were responsive to student and community need during this growth period. With colleges now facing the prospect of declining enrollments, many administrators and faculty are moving their attention from program development to marketing and retrenchment strategies.

The belief behind these actions is fairly clear. The way to handle declining enrollments is to change your image and learn to "sell what you have." If that doesn't work, the remaining alternative is elimination of excess staff and faculty.

It is our position that neither solution is acceptable, for both lead to the abandonment of any effort at curriculum development and change. Only through such change can colleges adapt to new student demographics and continue to contribute significantly to society.

We envision comprehensive planning as the vehicle through which curriculum change can be mediated.

Richardson (1978) points out that, "If colleges are to remain adaptive in a period of declining resources, they must change by substitution rather than addition. That is, if they want to add a new program or a new service in the absence of new funds, faculty and administrators must decide what they will give up in order to initiate the change" (P.68). But the decision as to which programs are added or deleted must be made with the full involvement of administrators, faculty and students. This element must be present in the planning process.

Neuman (1984) indicated planning to be a future-directed activity that takes place in the present; "...this definitional tension between the future and the present reflects a very real quandary in organizational planning: It is not clear how a planner should divide her attention between the subject of her work, such as action to be taken in the future, and the immediate task of creating plans" (P.1). In higher education when a college is in the midst of an enrollment decline, there are frequently compelling arguments to pay particular attention to the immediate future. Unfortunately, this emphasis may lead one to neglect the structure of the planning process - specifically, who participates in the planning process and what factors contribute to the planning process and what factors contribute to the planning structure. Peterson (1980), Cope (1978), Listov (1976), Priest and Pickelman (1976) and a host of others have provided excellent descriptions of what to include in the planning structure to assure comprehensive participation and support. Ideally, planning should force colleges to anticipate future events and not just react to situational crises.

CONSENSUS PLANNING

If comprehensive planning is to be the vehicle of curriculum change during the period of enrollment contraction and if such planning necessarily involves faculty who are responsible for curriculum then comprehensive planning must be decentralized. Michael Naylor (1984), general director of corporate strategic planning for General Motors, noted recently that the reign of strategic planning was over and that "planning is the responsibility of every line manager. The role of the planner is to be a catalyst for change - not to do the planning for each business unit" (P.4). Meaningful comprehensive planning for colleges and universities reduces itself to strategies for faculty involvement.

Where shall such strategies be found? Quinn (1979) notes that "The most effective strategies of major enterprises tend to emerge step by step from an interactive process in which the organization probes the future, experiments, and learns from a series of partial (incremental) commitments rather than through global formulations of total strategies" (P. 58). There must, then, be a conscious effort to stress planning and not the plan. This effort must continuously alternate in style and format.

Keller (1983) has noted in his now classic work, Academic Strategy: The Management Revolution in American Higher Education, that "he sees this as a period of retrenchment, decline, and realignment. The polar opposite of the growth, expansion, and clear sailing that marked the era between 1955 and 1974. In the years ahead, the colleges will have to adjust to new kinds of students; more and more of them will be Black, Hispanic, foreign, older, retired, and attending college only part time" (P.18). Keller Envisions colleges reassessing their curriculum and relationships with larger society. He has coined the term "Consensual Planning," which he sees emerging from faculty debates. "Planning" he says, "should ooze out of meetings and encounters almost unnoticed" (P.88).

THE CONSENSUS PLAN AT DUTCHESS COMMUNITY COLLEGE

For the past decade the planning process at Dutchess Community College took place separate from budgeting and curriculum development. It was directed by a group, mostly administrators, who were appointed by the President. The result was usually an orderly plan not known to the majority of faculty and designed to respond to specific state reporting requirements.

Up to Fall 1984, the College, like many two-year colleges, had experienced a decade of growth and expansion. It became clear during the previous spring that the enrollment pattern would be changing. Applications were down and traditionally strong programs like business administration and data processing were beginning to show stable to declining numbers. These changes were particularly disconcerting for Dutchess, an institution which had been over 40% full time when the national average has been 30%. The general belief of most faculty and many administrators as late as summer, 1984, was that "Dutchess was different from other two-year colleges and would suffer little or no enrollment losses in the near future."

It was in this climate that a new planning process was begun, climaxing with the 1984-85 Consensus Plan in September 1984 and just in time to witness the largest loss in enrollment in College history, in excess of 160 FTE (full-time equivalent students).

PROCESS

In December, 1983, the Dean of Planning and Information Services sent letters to members of the professional college community through numerous sub-units (Professional Staff Organization, Instructional Staff Council, etc.). The intention was to make the new planning process as open as possible.

At the initial meetings a comprehensive planning philosophy was discussed and an executive unit was appointed to include the Dean of Planning, a co-chairperson, a secretary and a planning techniques consultant.

The Dean distinguished this planning effort from past endeavors in that it was designed to provide certain major outcomes:

1. A set of college-wide objectives organized both by major functional areas and by major activities (crossing over functional areas).
2. A set of specific impacts for the 1984-85 budget.
3. A college-wide process integrated into departmental planning.
4. A comprehensive planning strategy consistent with, and included in, the Title III federal grant framework.
5. A linkage for the '85 reaccreditation effort.
6. A working relationship with the college marketing committee.

During the second overall meeting, the Planning Committee as a whole identified a series of major issues that would face the College in the future. Then the Committee subdivided itself into task force units in order to move from the issues list to position papers, which would serve as the initial stage for the 1984-85 Consensus Plan. The task force units were as follows:

Environmental Scanning: Identification and assessment process leading to an understanding of the influences external to the College and their impacts on current and future curriculum, enrollment and support services.

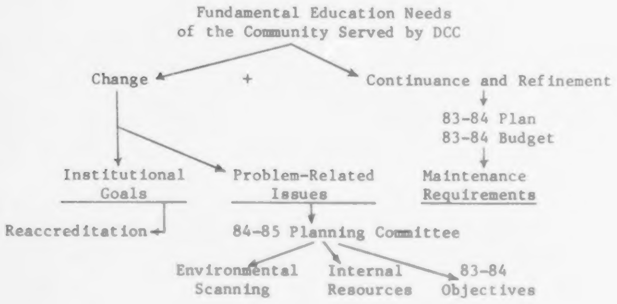
Internal Resources: Consideration of the College's existing resources and assessment of their ability to serve continuing and changing community education needs.

1983-84 Objectives: Review 1983-84 comprehensive plans of the College's five major areas and assess the degree to which comprehensive planning has been carried out in the College organization.

Throughout the spring an Executive Unit consisting of the two co-chairmen, secretary, and planning techniques consultant met as needed to coordinate the efforts of the three task forces. The role of the planning techniques consultant was particularly vital, as he served on each task force, lending continuity to the entire process. (Figure 1 summarized the process through the task force level.)

FIGURE 1

84-85 PLANNING PROCESS


Fundamental Education Needs
of the Community Served by DCC
Change
+
Continuance and Refinement
83-84 Plan
83-84 Budget
Institutional Goals
Problem-Related Issues
Maintenance Requirements
Reaccreditation
84-85 Planning Committee
Environmental Scanning
Internal Resources
83-84 Objectives

In late spring, 1984, the Dean of Planning reassembled the Planning Committee and presented the members with a first draft of the 1984-85 Plan based on task force position papers. The Committee responded with additional input.

During the summer of 1984, the President and Deans met to consider the draft Plan, as well as to prepare broad department activities that would serve to integrate the Plan into departmental planning.

DEPARTMENTAL REACTION

During the fall 1984 pre-semester activities, the Dean of Planning presented the 1984-85 Consensus Plan to an assembly of all faculty and administrators. Despite early efforts at openness, the first reaction at the departmental level was shock and bewilderment. While most department heads were aware that "something different" was happening in planning, most had not envisioned impact at the department level. Department planning in previous years had been separate from college-wide efforts and shortrun, budget oriented.

The first year of comprehensive planning was marked by substantial faculty input for the first time in the history of the College. This input was not always orderly nor without conflict. For the first time faculty saw planning as less than symbolic and reacted to establish influence, particularly in areas of curriculum.

IMPACT ON CURRICULUM

During the first semester of operation under the Consensus Plan, more curriculum proposals were submitted than in the combined total of the previous four years. The types of proposals fell into three major categories: changes, substitutions and eliminations. In the area of change, low enrollment programs in the same discipline were reorganized around a common core. this lowered administrative non-instructional costs resulting in program continuance at a more efficient level.

While comprehensive planning led to the elimination of some programs and courses, because of the larger framework in which this occurred, new programs were linked to these eliminations creating a substitution procedure. In general the Consensus Plan became an organizing form for expansion and substitution of curriculum, presenting an alternative to retrenchment and program attrition.

SUMMARY AND CONCLUSIONS

Between now and the mid-1990's, the traditional-age college population will decline by about 25 percent. Dutchess Community College, along with other two-year institutions, will have to adjust if it is to continue to contribute socially valuable services. The strength of community colleges has been their ability to offer services to "new students" who have been found unacceptable by other forms of higher education.

It is likely that two-year colleges will be called upon again to offer services to still newer groups as we enter the post-industrial age. The major change in community colleges which take up the demand of these new students will be in curriculum: its content and mode of delivery. A new planning process will be necessary to deliver these curriculum changes. It will be decentralized, faculty proactive, and feature line managers as planners.

Knoell (1978) has emphasized that opportunity now exists that "community colleges can consider the kind of mix they would like to achieve by 2000, together with a program mix to be offered in order to obtain the desired student mix" (P.80). Dutchess Community College has begun to address enrollment questions through comprehensive planning, diminishing concerns about retrenchment and program attrition.

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ALTERNATIVE GENERAL EDUCATION EXPERIMENT: WEAVING A NEW CURRICULAR FABRIC OF "LITERACIES"

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Institutions of higher learning in the U.S. today usually offer a menu choice traditional method of acquiring a general education foundation for undergraduate students. This method is one whereby students are required to select from an array of courses that give them a sample of various disciplines with exposure to various approaches and ideas unique to each discipline. The arguments for enforcing general education prerequisites to specific programs in higher education include breadth of knowledge necessary to be considered educated and the acquisition of generalized analytical skills unique to the liberal arts and sciences.

Unfortunately, the potpourri of tachistoscopic content that is flashed before the students eyes in the two years of traditional education lacks cohesiveness and meaning and can be distilled to remnants of memories associated with disciplines. In many courses the emphasis is on memorization and "opening students' minds" to new fields and points of reference. The Carnegie Commission Study (1977) referred to general education as a "disaster". The processes of thinking, creating, questioning and synthesizing are often not actively cultivated, are rarely evaluated, and the development of cross-disciplinary skills required for the post-education world are left to serendipity (Gaff, 1983).

The principle idea behind the **PAGE** experiment-- **Plan for Alternative General Education**-- is the integration of materials in the separate academic disciplines into courses organized by central intellectual themes rather than dividing the curriculum into various disciplines. The PAGE program at George Mason University was initiated by an interdisciplinary faculty committee, planned over eighteen months, and broadened to a core of faculty who have implemented the program. All courses are taught by interdisciplinary teams from disciplines related to the theme of the course. Plans to evaluate outcomes over four years were included from the onset.

In recent years, there has been an increasing emphasis on technological programs and competencies to adequately meet the needs of students and the community. Concurrently, this state university has maintained its commitment to the liberal arts and sciences as the foundations of higher education. The PAGE experiment was designed to fuse approaches and methodologies that students will encounter in today's real world while cultivating interdisciplinary applications of knowledge and skills.

The PAGE Experiment

The original PAGE project was funded by the Commonwealth of Virginia Funds for Excellence Committee to admit four classes of freshmen on an experimental basis for four years. The entire first and second years of general education would be provided to the students while data on students and faculty would be collected periodically to evaluate their progress in the curriculum, their chosen academic majors, and the impact on faculty teaching and research.

The $383,700 Funds for Excellence grant supported (1) a core of faculty to develop the courses, materials and resources, and (2) substantive faculty development for all the participating faculty. "It would represent a genuinely radical rethinking of the functions of the general education of university students in all disciplines" (Cohn, 1983). The program once initiated is planned to become both self-supporting and cost-effective and need no special funds to sustain its operation.

> Design. PAGE was first offered in 1983. A total of 279 students were recruited from all incoming freshmen to the PAGE program. Orientation included the concept of PAGE, the sequence of courses to be selected, and the specific requirements for declared majors. In the first few weeks of school, the students were assessed on a variety of dimensions to establish baseline data for ongoing evaluations. Simultaneously, a sample of 152 freshman students from the introductory English courses required of all traditional general education students were surveyed on attitudes as an initial comparison group.
>
> A second cohort of 214 freshman students were admitted in Fall 1984. This fall, the PAGE faculty and University Senate initiated work on the program evaluation for consideration of the decision to continue or modify PAGE after the 4 year initiation. Longitudinal study of these two cohorts of students along with two additional groups in the next two years will provide data and information on effectiveness of PAGE as an alternative to menu choice categorical general education requirements.

Cultivating the Education Environment for Change

In the early phases of PAGE program development, it was acknowledged that the success of the program would be contingent on the understanding and acceptance of the alternative educational approach within the entire university academic community.

> All departments were asked to define requirements for PAGE students to fulfill their major in the usual time frame. Faculty development was seen as critical for effective interdisciplinary teaching in the innovative curriculum. The presentation of the curricular design and cross-disciplinary linkages formed the basis of faculty development seminars supported by the grant in the summer of 1983, and a subsequent faculty development seminar in the summer of 1984. Faculty gained new insights about other disciplines and how to integrate core ideas from their own into PAGE courses. They also focused on approaches and methods to integrate writing, speaking, computing and problem-solving into each course.

The PAGE Model

The PAGE curriculum was developed to provide students with a breadth of knowledge, as well as the skills and opportunities to integrate and apply that knowledge. The curriculum model is based on a matrix structure of "strands" and "cross-threads". The two central themes or strands which form the basis of sequential course offerings include (1) Strand A- Symbols, Codes and Information and (2) Strand B- Values, Themes and Cultural Problems (PAGE Course Proposals, 1983). The "Strand Lectures" provide a forum for integrating the individual courses in the curriculum, providing an overall structure to link concepts between courses within and across strands (See Figure 1).

The "cross-threads" of the curriculum are three major functional activities referred to as the "literacies" of the PAGE curriculum--Writing and Speaking, Computing, and Problem-Solving. Faculty from all disciplines in the PAGE program are encouraged to actively identify elements of these skills in courses and foster development of these skills in various ways. Students in technical fields, social sciences and humanities are exposed to and reinforced for learning these literacies. Linkages are established in course design and communicated frequently in PAGE faculty development activities with the guidance of select faculty leaders. Teams teaching each course meet frequently to coordinate and reinforce linkages.

Writing and Speaking Across the Curriculum. The cross-thread of widest implementation is the writing and speaking literacy. PAGE pursues and extends the aims of the "writing to learn" movement by integrating writing and speaking in every course. In all the disciplines they encounter, students get writing practice and guidance in using appropriate strategies and forms. In four semesters, rather than one traditional course, students write lab reports, computer programs, autobiography, a variety of analytical essays, and research reports based on personal curiosity, surveys, interviews and library study.

Writing-across-the-curriculum is achieved through faculty training coordinated by a writing specialist. Since faculty work in teams to develop and refine courses, those knowledgable about writing can help others broaden their understanding of the uses of writing in teaching. Student writing is used less often as a test of knowledge than as a vehicle for elaborating and refining thought, as a means of discovering complexity, and as an opportunity of examining relationships among ideas.

The writing and speaking cross-thread provides multiple direct and indirect linkages to the curriculum. Writing assignments are an integral part of learning goals of each course. Students practice writing for diverse audiences and purposes using multiple strategies. In the course **Computers in Contemporary Society**, students write a research paper on computer applications in addition to their programming assignments. Electronic methods of writing via the computer system are used in several courses. In learning logs, students record impressionistic and analytical responses to readings, brainstorm solutions to practical problems, and explore connections between new information and old. The widespread use of learning logs, particularly fostered in the Strand and related courses, helps writers discover interconnections among their different courses. Several courses use small-group writing, discussion and oral speaking workshops to help students. In a few courses, the computer "mail" system provides a mechanism for written one-to-one continuous communication between student and professor.

Computing Across the Curriculum. The cross-thread of unique interest by students and the community is the computer literacy component of **PAGE**. Although a growing number of students arrive at George Mason with one or more high school courses in computing, most students enter the university with no computing experience. The first semester in **PAGE**, all students take a 4 hour introductory computer course, **COMPUTERS IN CONTEMPORARY SOCIETY**. This course has 3 themes: history and future of computer technology, PASCAL programming, and computer applications in the humanities, sciences and professions.

The teaching methodology is 2 hours of lecture for the entire **PAGE** cohort and 2 hours of discussion sections with 25-30 students. Computer literacy is achieved through reading and lectures on computer terminology, as well as hands-on experience with mainframe computing capabilities of the university. PASCAL programming language was selected for its highly structured and top-down problem-solving approach, although the primary emphasis in the course is understanding the logic and universal applications of a computer language rather than mechanics and details of computer programming.

The course has been taught by faculty from disciplines as diverse as Computer Science, Engineering, Information Science, Nursing, Psychology, Chemistry, and Geology. Their involvement with computer technologies have ranged from computer science as their primary discipline to computing as an auxiliary skill. The variety of perspectives enriched the presentations to students and helped faculty to refine their working definitions of computer literacy for students in equally diverse majors.

The computer literacy cross-thread provides direct and indirect linkages to many aspects of the curriculum. All students receive accounts for the university mainframe computer which they keep throughout their student career. Programs that are used in the introductory course can be used again later in the curriculum. The "mail" system allows for continuous individual communication among students, bulletin board or student-professor dialogue.

In some courses the computer is used as a computational aide, along with the calculator, as well as an electronic communication system. The students can communicate directly in the solution of complex problems by maintaining "electronic journals" that are retrieved by the professor periodically. Students receive feedback continuously in this kind of one-to-one communication process via the computer mail system. Several faculty have developed methods of distributing materials and collecting assignments via the mainframe (without paper).

The computer is also used as an adjunct for analyzing data in the problem-solving and science classes. In the humanities and social sciences,course assignments using the computer include using existing, specifically developed programs and data bases that perform operations such as analyzing literary text for authorship, creating tables of political statistics for understanding election outcomes, or scanning a categorical listing of current library holdings of musical recordings. The students learn how to run statistical packages on the computer to generate solutions to questions asked in the Strand A courses, and appreciate the potential uses of information technology in the Strand B courses. Faculty are assisted in implementing some aspect of computer technology by the leader of the computer literacy cross-thread.

Problem Solving Across the Curriculum. The cross-thread of analytical literacy is introduced in the computer course with the development of algorithms. Reasoning skills are refined in the curriculum in the courses Analysis and Solutions of Quantitative Problems I and II. It is from these specific courses that the PAGE student learns and practices the systematic method of solving both quantitative and nonquantitative problems (Polya, 1973) and subsequently translates these methods, with the assistance from faculty, in concurrent and sequential courses.

> The objectives of the problem-solving literacy include that students can: (1) identify and define problems, (2) select approaches to solve problems, (3) generate possible solutions, models, hypotheses, or testable propositions, (4) collect various forms of information regarding proposed solutions with respect to a problem and its constraints, and (5) determine the logical consistency among the information obtained, the problem as defined, and the hypotheses or solutions to be implemented. (Evaluation Manual, 1984).

The 2 specific 3-hour courses of this "cross-thread" are offered to smaller sections of students (30) as students develop skills in solving problems. The faculty involved with the development and implementation of this applied mathematics course have been from disciplines as diverse as Mathematics, Computer Science, Decision Sciences, Psychology, Biology and Nursing, all with expertise in quantitative methods. The collaborative activities of the faculty provide a broad perspective of subject matter, and help to identify a wide range of applied problems.

Faculty integrate a variety of mathematical and scientific constructs while focusing on the problem-solving process. These constructs include models, number sense and spatial sense, elements of probability, and some introductory calculus. The students also learn to use a sophisticated programmable calculator for arithmetic computations and statistical functions. The emphasis is on the design of experiments and collection of data, thereby deriving models from their activities.

The analytical literacy linkages within Strand A have naturally evolved. The calculator programming skills are built upon the computer course and branch to applications in the science courses. The experimental methodologies are repeated in Strand lectures as well as later courses of analysis, such as in the Science courses and the Decision-Making Courses. Periodically, the problem-solving "experts" foster understanding of the analytical process for humanities faculty. For example, one faculty group was taught a systematic approach to understanding and appreciating a work of poetry. This linkage continues to improve with continued attention to similarities in process and language of analysis and reasoning across disciplines.

Formative and Summative Evaluation Plan

A comparison of students admitted in program demonstrated that the freshmen in PAGE (PAGE:'83,'84→SAT $\bar{X}$=988, 981)were not "honors" students and were not atypical of the George Mason freshmen population in achievement (GMU:'83,'84→SAT $\bar{X}$=1021,1026). Their attitudes also appeared similar to the freshman English students in the first semester of college.

To date, the data available on the program include success in coursework and tracking students in the curriculum. The attrition in this highly structured program to the traditional program and transfers to other universities indicate some need to assess students who exit PAGE. Subjectively, it appears that successful students in PAGE are extremely satisfied with their progress, but, many who are not successful are more willing to take make-up courses in the traditional program than repeat courses in PAGE.

The actual benefits of the integrated curriculum cannot be fully realized until the lower division students become fully integrated into their majors. An external evaluation is currently being planned to determine the programatic outcomes and literacy competencies. This will be available in the next two years. Until that time, the process of general education at George Mason University will have undergone major changes. We have already learned from the initial experiences what components of integrated, interdisciplinary education work, and what expectations of students are unreasonable. The experience has been positive for faculty and students, and the university has put forward an ambitious, progressive and unique program.

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FIGURE 1

SCHEMATIC REPRESENTATION OF PAGE CURRICULUM
George Mason University

FRESHMAN YEAR		SOPHOMORE YEAR	
Semester 1	Semester 2	Semester 3	Semester 4
STRAND A (1:1:0) Symbols,Codes and Information (WS,C,P)	STRAND A (1:1:0) Symbols, Codes and Information (WS,C,P)	STRAND A (1:1:0) Symbols, Codes and Information (WS,C,P)	A8 (3:3:0) The Decision Making Process and Choice of Technologies (WS,C,P)
A1 (4:4:0) Computers in Contemporary Society (WS,C,P)	A3 (3:3:0) Analysis and Solutions of Quantitative Problems I (WS,C,P)	A6 (3:3:0) Analysis and Solutions of Quantitative Problems II (WS,C,P)	
A2 (3:3:0) Reading the Arts (WS,C)	A4 (3:3:0) Reading Cultural Signs (WS)	A5 (4:3:3) Scientific Thought and Processes I (WS,P)	A7 (4:3:3) Scientific Thought and Processes II (WS,P)
STRAND B (1:1:0) Values, Themes and Cultural Problems (WS,C,P)	STRAND B (1:1:0) Values, Themes and Cultural Problems (WS,C,P)	STRAND B (1:1:0) Values, Themes and Cultural Problems (WS,C,P)	B4 (3:3:0) The Contemporary United States (WS,C,P)
B1 (3:3:0) Conceptions of Self (WS)	B2 (3:3:0) Contemporary Society in Multiple Perspectives (WS)	B3 (3:3:0) Cross-Cultural Perspectives (WS)	

LITERACIES: WS= writing and speaking; C= computing; P= problem solving

ORGANIZATIONAL CHANGE AS A STIMULUS TO INTERDISCIPLINARY COOPERATION: AN EXPERIMENTAL RETURN TO THE BAUHAUS

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"'Organizational adaptation' refers to modification and alterations in the organization or its components in order to adjust to change in the external environment... Adaptation generally refers to a process, not an event, whereby changes are instituted in organizations...the emphasis is definitely on responding to some discontinuity or lack of fit that arises between the organization and its environment" (Cameron, 1984). This definition of organizational adaptation emphasizes environmental change as central to the discontinuity that induces an organization to seek adaptive measures to restore its "fit" with its surroundings. In the School of Applied Sciences at Northern Arizona University, internal and external environmental factors stimulated a change process that developed into a unifying force and eventually resulted in a new college based on a cooperative mode of operation.

The critical environmental factors fell primarily into the organizational domains that Daft (1983) designates as market and economic. A decline in the market for secondary teachers had been translated into decreasing enrollment in teacher education programs, the traditional focus of the school's two departments, home economics and industrial education. Concomitantly, increasing marketability of technologically oriented graduates produced a trend toward growing enrollments in areas such as industrial supervision (construction, photography, graphic arts and manufacturing technologies), interior design and fashion merchandising. As a result, the mission of the School shifted and a dual challenge emerged of meeting new educational needs without abandoning our longterm commitment to teacher education. Concurrently, reversals in the state economy were transmitted to the University in funding decreases that demanded intensive internal program evaluation by the institution. A university-wide review committee posed serious questions about the mission of the School that echoed the growing concerns of the faculty and prompted extensive internal evaluations.

Since adaptation was imperative, a change methodology was selected that included scanning the environment, setting goals, establishing a timetable, developing recommendations for a proposal, conducting the approval process and implementing the approved plan. The primary agent of change was identified as a faculty Task Force that was charged with the above objectives and given the latitude to consider any organizational alternative. As a continuing commitment to the democratic process, the Task Force was accessible to all faculty as voting members; all meetings were announced and open. With no voice excluded, the deliberations of the Task Force became studies in faculty unification. The voluntary membership simulated the overlapping group form of organization of Likert (1961), which built group loyalty and support of the collective decisions.

After assessing the salient environmental factors, the Task Force reached the conclusion that the key to adapting the organizational structure to the expanded mission lay in capitalizing on the diversity of the faculty by introducing an emphasis on interdisciplinary cooperation. In a spirit of mutual trust, unlimited options and strong faculty leadership, the Task Force proposed to eliminate the departments because these units were judged to be territorial and counter to intrafaculty communication. While it was recommended that the majority of the degree programs be retained intact, it was suggested that they be melded into a non-departmentalized college that stressed teamwork as a means of opening communication between the increasingly specialized professionals. Following the interpretive model of Chaffee and Krakower (1984), a plan emphasizing the importance of communication, symbols and achievement of social legitimacy way formulated.

The central theme of the proposal was based on the historical Bauhaus concept that unified function, design and technology by forming a group of talented artisans and technical experts to solve problems concerning all aspects of the production of various products. Architects Walter Gropius and Peter Behrens first expressed the concept in 1910 in Germany with their proposal for the industrial prefabrication of houses in which they noted that solving problems on a "unified artistic basis was a new move toward the synthesis of technology and art" (Bayer, et al, 1952). By 1919 their concept had grown into the Bauhaus at Weimar in which Gropius coordinated the efforts of architects, artists, craftsmen and technicians to design, produce and market a wide variety of objects ranging from furniture and textiles to dishes and lamps. Their objectives were to produce products that were aesthetically pleasing yet technically and economically acceptable. They moved design and technology from isolation to cooperation with the credo: "The Bauhaus strives to coordinate all creative effort, to achieve, in a new architecture, the unification of all training in art and design. The ultimate, if distant, goal of the Bauhaus is the collective work of art--the Building--in which no barriers exist between the structural and the decorative arts" (Bayer, et al, 1952). By housing individuals of varying talents in an academic environment in which barriers to communication were removed, they succeeded in pulling together the expertise that was essential to address problems and to work cooperatively through to answers that satisfied human needs, thus achieving social legitimacy.

During the next two decades, the Bauhaus moved to Dessau and then to Berlin and extended its unifying efforts to include the theater, printing, the fine arts and architecture. Because of political reasons, the Bauhaus was disbanded in pre-World War II Nazi Germany. Its legacy remained, however, and its members carried to their new homes the principles of unified design and technological efforts; ultimately these principles became the guiding tenets for The New

Bauhaus, School of Design in Chicago, later to be known as the Institute of Design. The Bauhaus concept spread to define the purpose and organization of academic units at the University of Illinois and Harvard University, as well as at Armour Institute in Chicago, the Laboratory School of Industrial Design in New York, the Southern California School of Design and other institutions.

A legion of famous names, designs and products have emanated from the original Bauhaus, and the spirit of its philosophical base permeated the Task Force's development of the guiding principle of unification. It was suggested that the new college would maintain a firm foundation of knowledge for its students by retaining its highly structured curricula for academic programs and stressing a strong prerequisite system. The Bauhaus Experience would then build on that foundation to provide capstone activities for students. The fundamental Bauhaus-derived philosophy was incorporated into the following statement:

> The College of Design and Technology at Northern Arizona University respects the unity of human needs, aesthetics and technological expertise as requisite to successful product development and is committed to collaborative efforts of faculty and students in the spirit of the Bauhaus. We regard a strong foundation of fundamental and technological knowledge as an indispensable base on which we can build a cooperative problem-solving charge with the goal of product development and related studies. To this end, we see a productive union with industry, business, government and education as essential, and we value intra- and interdisciplinary cooperation as paramount determinants of the effectiveness of unified endeavors.

The conformation of the organization of the College of Design and Technology to the Bauhaus concept may best be depicted in symbolic form. (See Appendix). The inner circle represents the basic philosophy for the Bauhaus Experience, which is the unifying strand. This philosophy is communicated to students through a required course that provides orientation to the concept, exploration of the facilities and capabilities, introduction to the professional options for graduates and familiarization with the opportunities to participate in the Bauhaus Experience. Any further involvement of students is voluntary; Bauhaus classes are open to juniors and seniors.

The segments radiating from the basic philosophy and spanning to the internship circle divide product development for Bauhaus classes into areas of activity and depict the essence of the Experience. Each focuses on an essential component of product development or denotes a related activity, such as consumer studies or education. The concept dictates little formal assignment of faculty or students to one area; rather it calls for flexibility so that on any given project, faculty can serve in any or all areas. On the other hand, faculty members have the option of specializing in one area of development and thus concentrating their contributions in that area if the best interests of the organization is served by such concentration. Thus, the organizational mode of a flexible matrix replaces that of the traditional departmentalized lines of command.

The next band depicts the important role of internships as an interface between the College and the private sector. This band provides the contact point between the academic pursuits and the professional environment and, as such, symbolizes the invaluable experiences students can gain from familiarization with professional responsibilities, procedures and equipment, as well as the benefit students derive from gaining confidence and from contacting potential employers. Internships also provide a channel by which firsthand experience with the Bauhaus can be communicated.

Another unifying aspect is represented by the outer band signifying that the influence and involvement of the primary constituents--industry, business, government and education--encompass all of the College's activities. Maximum interaction is encouraged by the establishment of advisory committees for all accreditable programs; these members of the private sector are valued for their counsel on curriculum development, placement of graduates and for their commercial cooperation in product development.

The following comments may clarify the nature of the various Bauhaus segments of activity, each of which is lead by a Bauhaus Coordinator.

Research and Development: Faculty members may apply for admittance to this activity by outlining a promising research proposal that meets with the approval of the Bauhaus Council of Coordinators. Typically, a broad range of interests is exhibited, and often outside funding is solicited. As product development necessitates, faculty members may be requested to conduct specific research activities or to supervise students in their quest for background information and methodologies. Both graduate and undergraduate students are active participants and may develop proposals under the sponsorship of a faculty member.

Design: Depending on the project, faculty members from several traditional disciplines participate in design activities. Designs for furniture and related items generally come from interior design faculty and students. Persons from the industrial technology areas are attracted to design problems involving electronics, metals, woods, energy, safety, etc. A design can conceivably involve any or all faculty members.

Production Technology: Faculty with sound technological backgrounds are called upon to supervise students who are capable of this manufacturing function. The instructors responsible for the academic programs related to industrial technology tend to gravitate to this challenge, namely those who share responsibilities for construction technology, photography/printing and manufacturing. However, others make significant contributions to the production phase. For example, a product that includes specifications for a specific type of fabric requires the expertise of the textiles instructor.

Merchandising: Those who lead degree programs in fashion merchandising and interior design are the logical leaders for this Bauhaus area, with some interdisciplinary cooperation from the College of Business Administration. Activities in this area often cross over into research and development if the charge involves assessment of the marketability of a product. Ultimately, those interested in the merchandising function become active in product presentation to industry and in distribution studies.

Consumer Studies: As either a culminating or an initiating activity, consumer studies attract those faculty who have long been committed to the fundamental philosophy of Home Economics. Since 1902, "Home Economics in its most comprehensive sense is the study of the laws, conditions, principles, and ideals which are concerned on the one hand with man's immediate physical environment and on the other hand, with his nature as a social being, and is the study especially of the relations between these two factors" (Fourth Lake Placid Conference, 1902). Concerns for the family and the consumer traditionally characterize these faculty and students, making them philosophically oriented to assess product effectiveness and to identify product needs.

Education: Closer to a hierarchical organization, the teacher education faculty members find that their roles are dual ones. They may and do participate in any of the previously outlined activities; at the same time, they are the interpreters who transmit the excitement of the Bauhaus Experience and the high quality of concomitant technical education to future secondary teachers. Moreover, the combination of the education programs in home economics, industrial arts and vocational education into a common subunit maximizes faculty resources, strengthens enrollment and encourages interaction with other education units across campus.

The climate of creativity extended from the development of the proposal to the pursuit of the necessary approvals, together with the support of the Vice President for Academic Affairs provided the School with the latitude to modify the normal sequence of consideration. After unanimous approval by the School's faculty and administration, the proposal was presented directly to the President and his Executive Council at a breakfast meeting attended by all faculty members. The early and enthusiastic central administration support facilitated the subsequent endorsements by the University Curriculum Committee and the Arizona Board of Regents.

Implementation was begun during the summer of 1984 and has progressed to the point that some impacts are self-evident. Initially, unity was promoted by joining the two departments physically, so that mail was distributed in a central location, and by restructuring clerical support so that services were available at a common office. Subsequent to the increase in casual contacts, faculty members from the diverse fields began to share ideas related to coursework and curricular matters.

At present, the first course of the Bauhaus Experience has been planned jointly by the Bauhaus Coordinators, who represent four different subject areas; the first students are enrolled. Cooperation is evident as each degree program committee reviews its curriculum with goals of including the Bauhaus course and exploring the flexibility that would permit students to include other interdisciplinary studies. For example, the combination of selected courses in interior design with courses in photography enables a student to specialize in the restoration of interior architecture--an interdisciplinary approach that would not have been possible before the cooperative mode was established. While the extent of the impact cannot yet be predicted, the optimistic mood of the faculty and the perception of positive direction by the central administration promise a broad range of programmatic possibilities for the new College of Design and Technology.

In summary, it appears that the environmental discontinuity experienced by the School has been correctly assessed and effectively corrected. In the spirit of Zammuto and Cameron (1983) regarding their concepts of ecological niches, the new College seems to have created congruence with its environment to regain an acceptable niche and to nurture a cooperative mode that for the faculty and students is without parallel.

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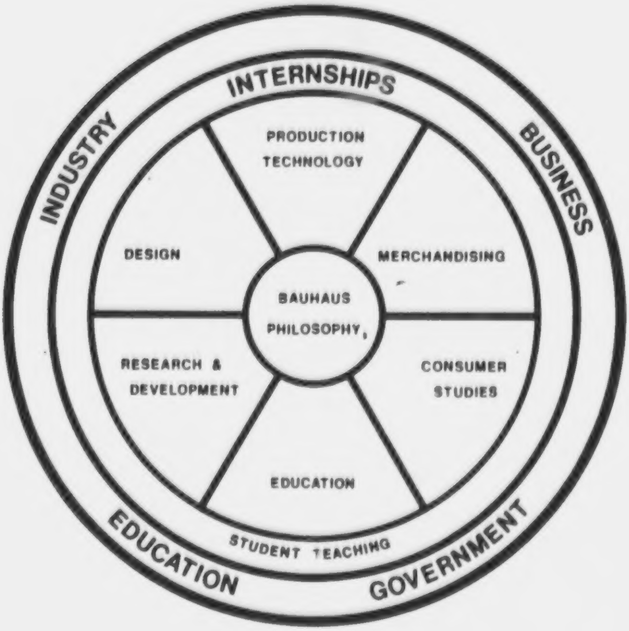
APPENDIX


INTERNSHIPS
INDUSTRY
BUSINESS
PRODUCTION TECHNOLOGY
DESIGN
MERCHANDISING
BAUHAUS PHILOSOPHY
RESEARCH & DEVELOPMENT
CONSUMER STUDIES
EDUCATION
STUDENT TEACHING
EDUCATION
GOVERNMENT

Diagrammatic Representation of the Salient Features of the College of Design and Technology

Central to the symbol is the Bauhaus philosophy, which stresses cooperative efforts by individuals of diverse backgrounds in order to create functional and aesthetically pleasing products.

Radiating from the central philosophical base are wedges representing the steps in product development. Faculty and students from varying subject areas participate in research and development, design, prototype production, merchandising and consumer studies directed toward product development. Those affiliated with education are both participants and interpreters who communicate the teamwork effort to secondary teachers.

Internships, including student teaching, provide the interface between students and future employers, who are also the constituents of the College. The constituency in the private sector includes industry, business, government and education.

EXPERIMENTAL COLLEGIATE EDUCATION IN THE UNITED STATES

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Education is by nature experimental. As old forms fail to meet changing conditions, educational strategies adjust to accommodate these new conditions. When existing schools are unwilling or unable to make the adjustments, new schools or other agencies come into being to meet the need.

At the collegiate level in the United States, Harvard, William and Mary, Yale, and Princeton essentially were first organized to train clergymen. Given this emphasis, their curricula were specifically vocational: their clients studied Hebrew and Greek so that they would be able to read the Old and New Testaments in the original languages, Latin so that they could read the writings of the church fathers, and philosophy so that they could understand better what the church fathers propounded.

As the young nation developed, new kinds of students sought the opportunity to continue their educations without going to Europe to do so, and in 1751, the Charity School of Philadelphia, later to grow into the University of Pennsylvania, was opened after eleven years of planning to provide a less classical education for young men who would go into law, medicine, and commerce rather than into the clergy. Other schools gradually followed suit. Yet it was not until the middle of the nineteenth century that most colleges and universities in the United States relaxed the classical language requirements which they clung to in the name of maintaining academic standards, even though the vocational necessity for such study had by this time vanished for most of the students attending institutions of higher learning.

In the present century, even in the dark days of the Depression, some full-fledged educational experimentation took place in the United States. Robert Maynard Hutchings went to the University of Chicago from Yale in 1929, first as president and then as chancellor of that institution. Under his direction and with significant help from his colleague Mortimer J. Adler, the University instituted the celebrated Great Books Program, under whose provisions students could enter the University whenever they passed the entrance examinations (some 12 year olds were admitted) and could leave it with a baccalaureate degree as soon as they had satisfactorily passed a comprehensive examination on the far-ranging readings that comprised the program. A few students received the A.B. degree after less than a year at the University.

Although this program has now been replaced at Chicago, it still exists in modified form at both the Annapolis, Maryland and Santa Fe, New Mexico campuses of St. John's College, an institution that has traditionally focused on the kind of humanistic education that Chicago's Neo-Scholastics organized into the Great Books Program.

Also in the 1930's, Bennington College, with leadership from Thomas M. Newcomb, moved to what then seemed like a quite radical educational experiment. Within the more traditional institution, a small optional living-learning college was set up with an interdisciplinary core curriculum. Students had easy and frequent access to faculty, and classes were small so that a seminar atmosphere was possible. Grades were abandoned in favor of narrative evaluations by faculty.[1]

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[1] For a full description of the Bennington Plan see Thomas M. Newcomb and Kenneth Feldman, The Impact of College on Students (San Francisco: Jossey-Bass, Inc., Publishers, 1973).

However, it was not until after World War II that the current wave of educational experiment at the college and university levels began to grow significantly. It was not until the student and social unrest associated with the Vietnamese War of the 1960's erupted that the wave crested fully and that new experimental institutions began to spring up in profusion to meet the educational needs of a new constituency.

In the fifteen years immediately following World War II, college campuses changed drastically as they were flooded with returning veterans eager to continue their educations because they realized that doing so would give them a way of improving their lives. They were able to continue their interrupted educations because the government was willing to subsidize the cost. Campuses soon were overcrowded, and many of the returning students were five to ten years older than the typical undergraduate. These were mature, seasoned students who approached their work seriously and, in most instances, met their academic obligations promptly and well. The discipline of military training carried over into the academic lives of these returning veterans, and most academics considered them model students who brought a new maturity and responsiblity to undergraduate education.

Colleges and universities expanded to meet the needs of the great influx of World War II veterans. When they had passed through the educational system, yet another constituency swelled the roles of higher institutions as a result of changes in the fabric of United States society which now began to offer more equal opportunities than had previously been available to all citizens, particularly to women and to members of racial minorities. Gone were the days when higher education was accessible only to the privileged.

During this period, the California system of higher education provided a model for several other states. This system consisted of community colleges, which were essentially open-door institutions; state colleges, which had moderate entrance requirements; and state universities, whose entrance requirements were high. Under this system, practically any high school graduate could enter an institution of higher learning. A marginal high school graduate or a high school dropout would necessarily begin at the community college; however, if such students did well at one level, they could easily and quickly move to one of the other two levels. Many students blossomed academically in the community colleges and went directly to one of the several branches of the University of California to enter degree programs.

Nathan Glazer observes, "The actual pattern in a system of graded academic institutions, such as the public institutions of California, is for students to enter where they can, and work themselves up in the system, if they can." He continues, "In other words, hierarchy itself, in the form of institutions of different degrees of selectivity, when combined with a system that permits easy transfer from one to the other--as in the state of California--seems to do more, to my mind, to maintain morale throughout the system than would graded institutions without transfer."[2] Perhaps no more egalitarian public educational system existed in the United States during the 1950's and 1960's than that in California.

At about the same time, the City College System in New York, which had long offered quality education essentially free of charge to all citizens of New York City who qualified for admission, adopted an open admissions policy under which virtually every applicant to the CCNY System was guaranteed admission. In both California and New York, the student population changed quickly and drastically, although New York probably suffered the greater dislocation as a result of these changes because suddenly schools that had previously served an academically competent student body found that students had been admitted who were, in many cases, functionally illiterate. Faculties unused to dealing with disadvantaged students were often unable to cope with their new constituencies, yet they were mandated by law to work with students admitted under the new admissions policies.

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[2] Nathan Glazer. "Are Academic Standards Obsolete?" *Inside Academe: Culture in Crisis* (New Rochelle, NY: Change, 1972), p. 156.

At the other end of the spectrum, educators were growing concerned about the loss of talent that occurred when truly gifted students, those with highly developed skills of literacy, and those capable of self-motivation, became so bored with school that they did not continue to college or, if they continued, dropped out short of graduation. New College in Sarasota, Florida opened its doors in 1964 to serve the needs of just such students. Still flourishing today, New College's entrance requirements are high and its focus is inter-disciplinary. Courses are planned around central themes in all of the fields of study the school offers--the natural sciences, the social sciences, and the nonsciences.

New College admits some students after their junior year of high school, but it does so only when there is evidence not only of academic accomplishment on the parts of such students but also some indication that they have made accelerated progress and are capable of considerable self-direction. All New College students are required to enroll in four independent study series, which are tutorial and which can be pursued away from the campus.

New College transcripts are narrative. Students are required to draw up contracts for their independent study programs, and their performance is judged on the basis of how well they accomplish the terms of their contracts.

The University of South Florida, of which New College is now a satellite campus rather than the private institution it started out as, is also a relatively recent addition to the State University System of Florida. It is designed to be a "center for the intellectual, cultural, scientific, and economic interest of the state."[3] The school combines study with work experiences and places a heavy emphasis on general education courses, which are taught even at the beginning levels by regular faculty rather than by teaching assistants and which comprise one-third of every student's baccalaureate curriculum.

The work-study format in effect at the University of South Florida is not new in higher education. Berea College, established as a college in 1869, has always had a work-study curriculum and presently offers a five-year baccalaureate program which requires substantial work experience in a variety of the college's several industries. Drexel University also has a long tradition of work-study programs, which are required of all students. However, more recent is the concept of external degree programs whereby students can earn academic credit for work experience and can translate many elements of such experience into academic credit applicable to undergraduate or advanced degrees.

One interesting example of a variation on such a program is that of the Community College of Vermont, established in 1970. Students in this school, which is open to any Vermont resident, range in age from 16 to 70 and more than two-thirds of them hold regular jobs while they pursue their educations. About 35% of them have previously dropped out of secondary school or other colleges. These students contract for their Associate of Arts degrees, spelling "out their skills and knowledge and how they were acquired. Letters, certificates, recommendations, or other documentation establish how well each was mastered."[4] Working in concert with a local review committee that consists of an instructor, a college staff member, another student, and a professional from the community, each student individualizes his or her own program of study. The institution has no full-time teachers but rather draws its staff from people who work in the fields they are teaching about. A teacher support staff helps inexperienced teachers--who, for the first five years of the college's existence, volunteered their services--to function effectively in the classroom. What these instructors lack in experience, they more than make up for in their sincerity and credibility.

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[3] Ann Heiss. An Inventory of Academic Innovation and Reform (Berkeley, CA: The Carnegie Foundation, 1973), p. 6. This source gives information about both New College and the University of South Florida at Tampa.

Perhaps the fastest growing field of higher education in the United States today is in continuing education. This is an area in which growth will accelerate, because technological change will demand that people whose jobs have become obsolete be retrained for other jobs. Harold Shane estimates that by the year 2,000, or at the latest by 2006, half the jobs that people now hold will have been eliminated because of advanced technology.[5] He also contends that in the future "one of the basic qualities of good schools will be their ability to teach skills that are transferable from one job to another in a rapidly changing world of work."[6]

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[4] Rita Cipalla Bobowski. "College Model for the Grass Roots," American Education, 12 (June, 1976), p. 14.

[5] Harold G. Shane. "The Silicon Age and Education," Phi Delta Kappan, 63 (January, 1982), p. 306.

[6] Harold G. Shane. "The Silicon Age II: Living and Learning in an Information Epoch," Phi Delta Kappan, 65 (October, 1983), p. 129.

Ronald Palamara supports Shane's contention: "In today's rapidly changing society an individual should be prepared to pursue possibly as many as three or four careers. A person may well be an engineer today, a teacher tomorrow, a computer technologist the next day, and who knows what on the fourth."[7] These sentiments, which are currently shared by most thoughtful and informed prognosticators, point irrevocably to the fact that much formal education in the future will be a continuing process, that it will be vocationally oriented, and that it will be offered at times and in places that suit the convenience of learners. Probably an increasing number of instructors will be practitioners in the fields in which they are teaching rather than remote academics whose whole life is college- or university-centered.

Indeed the remote academic, the narrowly focused specialist, may find survival difficult in the educational context of the future. While the best of the research-oriented institutions will continue to provide an academic home for the one or two percent of the narrowly focused specialists who are clearly outstanding, most other institutions will hire teaching faculties who can adapt readily to change and who will be able to instruct in a variety of instructional areas.

One of the boldest experiments of the last decade is Evergreen State College in Olympia, Washington, which enrolled its first freshman class in 1971. In this school, which currently has about 2,500 students, there are "no grades, no majors, no departments, no tenure, and no intercollegiate athletics. Students . . . enroll not in four unrelated courses each semester but in full-time, multidisciplinary 'coordinated-studies programs' lasting an entire year."[8] Instruction is offered in small seminars where both students and their instructors are engaged in an ongoing exploratory learning process. Transcripts include both faculty evaluations and student self-evaluations. No grades are recorded, because grades "would force faculty members to 'translate students into numbers.'"[9] Librarians at Evergreen rotate onto the faculty for one semester in nine, and faculty regularly rotate into the library for a semester, where they work to improve library materials in their own disciplines.

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[7] Sandra M. Long. "The Dawning of the Computer Age: An Interview with Ronald Palamara," Phi Delta Kappan, 63 (January, 1982), p. 313.

Space limitations forbid a discussion here of all the types of experimental programs that have developed in higher education in the United States since the end of World War II. Changes inacademic calendars, in grading procedures, in testing practices, in tenure policies, and in teaching techniques have been going on in most schools during this period. Cluster colleges, colleges within colleges, and extended colleges have developed. New fields of concentration such as Black Studies, Women's Studies, Gay Studies, and film have proliferated throughout the U. S. At no time in our history have more options been available to students who seek alternative ways of learning.

These changes certainly have not been limited to the United States. Britain and Western Europe have also been undergoing drastic change as tertiary institutions have grown there at a rapid pace. Erich Leitner contends that such changes have "taken place in almost all countries with a high industrial and cultural standard such as is found in the countries of Western Europe."[10] He notes that in France, technological schools have proliferated, while in Germany, comprehensive college and universities have been established.

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[8] Lawrence Biemiller. "Evergreen State College Still Eschews Grades and Tenure, Now Flirts with Prosperity," Chronicle of Higher Education, 29 (November 14, 1984), p. 11.

[9] Ibid., p. 12. See also Richard M. Jones' Experiment at Evergreen (Cambridge, MA: Schenkman, 1981).

In England, seven reform universities were founded in the sixties. The seven--East Anglia, Essex, Lancaster, Kent, Sussex, Warwick, and York--were established in response to the climate of the times. In Germany, the establishment of such institutions of higher learning as Bochem, Bielefeld, Bremen, Konstanz, Regensburg, and Ulm reflected a similar need for educational reform, as did the establishment in Austria of the University for Educational Sciences at Klagenfurt.

As we move into the third millennium of our history, the social and technological challenges that face us will necessarily be tied to the ability of educational institutions to provide means for people to meet these challenges intelligently. The drastic changes that have occurred since the end of World War II are just the beginning of a process that likely will eventuate in a total redefinition of higher education as we know it today.

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[10] Erich Leitner. "Reform by New Establishment: Europe's Young Universities," Western European Education, 12 (Winter, 1980-81), p. 8.

COMPUTER TRAINING AND NETWORKING

WEDNESDAY, 3 JULY

1330 - 1500

A FACULTY MICROCOMPUTING TRAINING PROGRAM

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INTRODUCTION

College and university professors are expected to keep abreast of their field through continual study. It is however unprecedented in the history of education that college professors irrespective of rank and academic discipline embark on a study of a common subject. Yet this is the case with computing. Although a good proportion of faculty at one time or another have used computers, the use has been largely limited to research. It is the microcomputer, so readily accessible, with its multiple functions so applicable to academic life that has captured the imagination of the scholarly world.

The spirit on our campus is that within relatively few years every faculty member will have a micro in his/her office. And the projection is well founded. Faculty and administrative offices are currently purchasing micros at a rate of 30 a month. This year the Davis campus announced a $300,000 grant program designed to provide micros for approximately 150 faculty members, and a similar grant is expected next year. Furthermore, computer companies (IBM and DEC) have loaned the campus micros for instructional purposes. U. C. Davis is thus fortunate to be in the position to help faculty acquire micros.

This proliferation of micros has raised a number of concerns: (1) a high proportion of faculty are unfamiliar with micros and require some training, (2) faculty expecting to purchase a micro are uncertain about the kind of hardware and software to obtain, (3) once faculty obtain micros will they use them or will the micros in time sit idle in faculty offices? Although micros are becoming increasingly less expensive, their cost nonetheless constitutes a considerable financial investment. The microcomputer training program that our campus developed was designed to address these concerns.

FACULTY MICROCOMPUTER TRAINING PROGRAM

The microcomputer training program is composed of two components: (1) self-help lab, and (2) a five-week series of workshops.

Self-Help Lab

The campus instructional development office, the Teaching Resources Center, obtained funding to purchase three micros that are serviced by our campus along with a variety of software for each machine. In addition, the lab contains video and disk autotutorials, and a modest library of books on micros.

The Lab was set up for two major reasons: (1) to provide faculty with a setting where they could leisurely and in private learn about micros and different kinds of software, and (2) to provide faculty the opportunity to test out different kinds of micros and software before deciding on a purchase.

Two years ago when the Self-Help Lab was established, it was used continually by both the novice and the experienced computer user. Today, however, when so many faculty have access to micros, the usage level of the Lab has dropped significantly. By and large, faculty no longer come to the Lab to learn about microcomputing but rather to test the different machines.

Five-Week Workshop Series

The workshops are designed to introduce faculty to a wide variety of microcomputer uses applicable to academic life. The workshops stress hands-on experience. The classes are taught in a microcomputer classroom where there is one micro per participant. In addition, each faculty member enrolled in the workshops receives a micro on loan for the duration of the five week session. Providing faculty with these loaners has been a major contributor to the success of the workshops. We discovered in a previous series of workshops that unless faculty have easy access to micros, the workshops have little effect. In the current workshops, faculty can practice what they learned in class at their leisure within the confines of their office.

We offer 8 two-hour workshops over a five week period to 20+ faculty members per session. There are five sessions this academic year which means that we will have graduated over 100 faculty members before June. We have an additional 200 faculty on the waiting list for next year.

The instructors for the workshops are faculty members and staff from a variety of units including the campus Computer Center. In addition to the instructor, one or two assistants circulate among the faculty during each workshop. Should faculty have a problem with microcomputing outside of class they are encouraged to call either the instructor or one of the microcomputer consultants at the campus Computer Center.

The following is brief description of each workshop in the series.

1. Introduction to Microcomputing (1 session).

Faculty are given an overview of microcomputing including an introduction to MS DOS, file management, and the everyday care of micros and disks.

2. Wordprocessing (2 sessions)

The type of wordprocessing program used depends on the instructor's preference. So far we have used WordStar and Spellbinder with equal success. Because all participants are very interested in wordprocessing, faculty make significant strides in this area in a relatively short time.

3. Database Management (1 session)

We use DBaseII to introduce faculty to designing, building, appending, searching, and editing databases. Faculty receive practice in developing bibliographic data bases.

4. Communication with Main Frame (1 session)

Faculty learn to use the micro as a terminal, and to move text and other data files between the micro and several mainframe computers. This session is especially popular among faculty interested in using large statistical packages such as SAS or SPSS, building large databases, or typesetting manuscripts.

5. Spreadsheets (1 session)

We use Lotus 1-2-3 as an example of spreadsheets. Faculty learn to enter student names and exam grades, weigh scores, calculate means and standard deviations, and sort the data in a variety of ways.

6. Computer Graphics (1 session)

Faculty learn to plot a variety of curves and charts using Lotus 1-2-3.

7. Library Searching (1 session)

Faculty are shown how they can use the micro as a terminal to access library databases from around the country. This session taught by campus librarians specializing in computer searches introduces the faculty to the principles and mechanics of conducting library searches. Each member in the class receives a modest stipend to practice this task on their own.

Overall, the sessions have been well received by the faculty. On a five-point scale ranging from excellent to very poor, the ratings are between good and excellent. We feel the success of the microcomputer training program rests not just with the instructional components but also with the fact that each participant has a micro to practice on and has the prospect of acquiring a micro of his/her own through a grant program. There is no question about it, under these circumstances the motivational level among faculty is high for learning about micro computing.

UNDER PRESSURE
ACADEMIC LIBRARIES AND THE ELECTRONIC INFORMATION AGE

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1. The Cost of Adding Electronic Information Services to Programs with Limited Resources:

It is a truism that library budgets are never adequate. Despite the often uncritical frequency of this assertion, it is true. A study by the last Curtis G. Benjamin, one-time president of the McGraw-Hill Book Company, confirms that the prices for practical and professional works, which are a major element in research collections, have increased 540% since 1947. There are no statistics that support similar increases in library budgets; in fact, the opposite is the case. Federal statistics indicate that while the index of cost of library materials rose from a base of 100 in 1967 to an index figure of 267.7 in 1977, library expenditures during this period (i.e., book budgets) rose only to 202.6 on the index for the same period.

The scholarly book trade is well aware of the declining importance of the academic library market in the United States. Barry Fast, President of Taylor-Carlisle Booksellers in New York, a major supplier of books to academic libraries as markets. In his 1983 address to the International Group of Scientific, Technical and Medical Publishers, Fast documented that major research libraries in the U.S., including Stanford, MIT and Johns Hopkins, are experiencing net declines in materials budgets when funding is compared with inflation and the increasing price of books.

In these circumstances, the reluctance or inability of academic libraries to add electronic information services on a cost-free basis is understandable and accounts for the frequent practice among libraries of charging fees for all or a portion of electronic information services provided to faculty or students. A 1983 survey of 1,000 academic libraries in the U.S. found that nearly 70% are charging users fees for information from electronic sources, primarily bibliographic data bases. The extent of the charges vary from full cost recovery (including staff time) to a variety of subsidized rates. At Colorado State University, where the book budget has seldom reached recommended funding levels, full cost recovery is the practice. Among research libraries in general, the norm is to charge fees for electronic information services, as documented by a survey conducted by the Association of Research Libraries of its members. Fees, especially in public institutions, fly in the face of the established library credo of free access and service, and the issue of fees is the cause of much anguish in the library community.

2. Existing Computerization in Academic Libraries:

The response of academic libraries to funding problems has been resource sharing and networking, both of which are related to the use of telecommunications and computers. Since the late 1960s library records in machine readable form have been collected by various consortia of libraries into large cooperative databases. In North America there are four major consortia: OCLC (Online Computer Library Center, with approximately 2,500 members); The Research Libraries Group and its database, RLIN (Approximately 50 members including the research libraries of the U.S.); the Washington Library Network (WLN) operating primarily in Northwest U.S., Western Canada and Alaska); and UTLAS, a network sponsored by the University of Toronto. SUNY Albany is a member of both OCLC and RLG; Colorado State is a member of RLG. These major bibliographic networks were founded, planned and implemented on the premise of a large computer system storing large quantities of standard bibliographic records and providing auxiliary services (catalog cards, interlibrary loan information, etc.), all of which would be accessible online to member libraries, even in remote locations. One substantial element in these networks is telecommunication which, when the systems were designed, were expected to be a diminishing cost factor in this form of automation.

The divestiture of AT&T in 1982 is bringing to an end the hopes that inexpensive telecommunications will continue. In October 1983, shortly after the divestiture, AT&T filed a tariff proposal with the Federal Communications Commission which would have increased the cost of library telecommunications by an estimated 73%. The alarm which spread through the library community in the U.S. was considerable, and resulted in heavy and concerted lobbying in Washington to present the rate hike. The matter was temporarily resolved with the FCC found the rate proposal unlawful, although an explanation of why this finding was arrived at was never made public. In a slightly more favorable political climate, AT&T has again filed for new tariffs as of January 18, 1985, which will have an almost identical impact on libraries as the original proposal. Interestingly, AT&T has requested that the rates be implemented within thirty days, presumably to cut short the amount of lobbying opponents to the rate hike will be able to accomplish. The outcome of the present tariff revision is unknown as yet.

Networking has contributed to an air of hostility which has recently developed between librarians and publishers. The substantial increase in interlibrary loan efficiency provided by networks has, not surprisingly, resulted in an increase in interlibrary loan activity. As libraries are forced to cut subscriptions because of low funding and high subscription costs, it becomes more common to rely, for more esoteric, non-core material, on the resources of larger and financially stronger libraries through "resource sharing." Publishers, quick to label these transaction a loss of their revenue, are highly critical of the networks which permit quick location and borrowing arrangements to be made. The differences have generally been debated in the U.S. around the issue of photocopying provisions of the Copyright Revision Act of 1976 (PL 94-533). In the 1982 review hearings which monitor the effectiveness of the new Copyright Law, Peter Urbach, President or Pergamon International Information Corporation, gave a typical publisher's response to library networks when he commented, "As these [networks] improve, fewer journals subscriptions will be purchased with more and more articles supplied by those relatively few institutions who maintain subscriptions." Robert Campbell of the British firm Blackwell Scientific Publications, has proposed that, since libraries have become de facto pirate publishers through massive photocopying, they must be removed from the information chain. He has encouraged publishers to concentrate on replacing paper publications with electronic information systems which would make information available only on a "pay-as-you-use" basis, and would be available only from publishers or their agents, but not from libraries.

A final aspect of library automation and networking is the question which has been raised as to whether libraries are investing their information dollars wisely. As budgets in effect stagnate or decline, automation and networking costs assume larger and larger percentages of total expense, consequently diminishing budgets for research materials. As one study based on a Book Industry Study Group survey concluded, "It will serve no purpose for libraries to embark on automation programs involving the most sophisticated hardware and programs, if the end result is to keep reducing the acquisition of books, periodicals, and other resources that have traditionally been the foundation of library service."

Tangentially related to the budget problems of libraries of information to the campus computing centers have or may have in the delivery of information to the parent academic institution. A recent editorial in the major journal for academic librarians suggested that the glamour of "high tech", in addition to the current cry for computer literacy, may result in a shift of information dollars from libraries to computer services units:

> Computer centers are now eying with envy the indirect sources of funds, namely tuition and/or state appropriations, that have long provided the library its support. And libraries are looking more toward direct cost recovery. Since faculty and students are becoming more dependent upon computers to perform mathematical calculations, statistical analyses, and to access bibliographic data, the long range challenge to computer centers as well as to libraries will be to develop strategies that increase funding levels.

3. The Information Marketplace:

As libraries contend with the immediate information problems confronting them, an entirely new electronically based information marketplace is rapidly developing. Large trade publishers have already begun digitalizing their products. John Wiley, Pergamon, McGraw-Hill are examples of "old" publishers who are making significant advances in electronic publishing. Old publishers bring to contemporary publishing experience in acquiring information and authors, as well as expertise in marketing, and established and respected names. They are also keenly aware of the potential for profits in the Information Age. Information market experts are quite firm in predicting that the only growth area in publishing will be in its electronic form, while print publications will remain a relatively stable market in the forseeable future. As one market analyst predicted, "Those who jump in later after the others have worked out the bugs, may find their procrastination costly because someone else has stolen the market opportunity."

The self-consciousness of the new information providers is evident in the name chosen for their Washington lobby, the "Information Industry Association" (IAA). LIke the industry it represents, IIA is composed of hardware, software, and telecommunication firms. Its objectives can be characterized by the title of one of its recent publications, The Business of Information (1983). Together, the members of IIA constitute the potential for becoming an information system completely autonomous from that of the Industrial Age with its book and libraries.

IIA appears to be founded on valid assumptions. Computer literacy and computers, themselves, are becoming an integral part of the educational system in First World countries, encouraged by the quantities of personal computers presented to school and colleges by IIA members such as Apple Computer, Inc. Although the present computer populations in U.S. primary and secondary schools is only 1 per 92 students, the ratio is expected to drop to 1 per 23 students within two years. In 1984 alone, nearly one million personal computers were added to the education system of the U.S. at a cost of $2 billion. The 1983 annual conference of the American Association for Higher Education heard predictions that within 20 years computers will have displaced books as the major delivery device of presenting information to students. Despite the symbolic as well as practical uses which microcomputers are providing, a 1984 survey of members of the Association of Research Libraries indicated that fully 16% have yet to acquire one.

Electronic information services are grouped into two categories: reference databases and source databases. Reference databases are related to printed documents and serve somewhat as automated indexes to literature which, itself, is not contained in the database. Source databases, however, provide primary, in some cases raw, information and directly satisfy research needs. An estimated 75% of the electronic databases in existence fall in the source category. Despite this high percentage, libraries in the U.S. currently provide access to only 19% percent of them.

This modest showing by academic libraries suggests the lag in information delivery which is developing in the U.S. Source databases are considered the primary growth are of electronic publishing, increasing by an estimated 430% between 1980 and 1985. The increase is primarily the result of research patterns by users who, as documented by a published study done in Europe, predominantly require hard data and not bibliographic references. There is also a growing market for general online information such as news, events schedules, business reports and electronic mail.

The primacy of reference databases in academic library service suggests that libraries also retain a book orientation rather than, in the context of the new Age, an information orientation. An Association of Research Libraries survey of 34 research institutions published in 1984 indicated that only 5 of its 126 members currently provide access to non-bibliographic source databases. In 8 institutions, the computer center provides the only access to these, and in fully 10 institutions, access to source databases is provided by academic or research units not associated with either the library or computer center.

Academic libraries can be hindered in providing source database service by lack of trained personnel. A taskforce established at SUNY Albany in 1982 studied the leadership role the library might assume in providing access to the non-bibliographic databases. The taskforce identified the need for such a service and gained approval for the service to be established in the library. However, despite the need, the library was unable to attract any satisfactory candidates for a Data Collection Coordinator/Social Sciences position who combined both a professional library degree with the requisite technical skills necessary to access the databases. This suggests a deficiency in the ability of graduate library schools in the U.S. to produce librarians with adequate training for the Information Age--a recurrent theme in library literature.

Access by persons with personal computers to all databases is becoming easier. Middlemen vendors of some electronic information services have "friendliest" their accessing and searching protocols to accomodate the increasing number of Americans with personal computers. These services includes BRS's "After Dark" and Dialog's "Knowledge Index," both of which are available during non-prime times at reduced rates. The National Federation of Abstracting and Information Services (NFAIS) has recently produced EASYNET, a menu-drive online information retrieving system which gives even neophytes access to a wide range of commercially available databases. EASYNET requires no pre-registration, password or previous knowledge of databases searching, and is available at a very low charge.

Undoubtedly the greatest challenge of the Information Age is the commercialization of information which will pit academic libraries against some of the largest financial interests in the world. One market analyst has concluded that, "As information becomes more important, the owners of capital will appropriate the information utilities. One example of this trend is Thyssen-Bornesza, a German-based firm with primary holdings in the manufacture and distribution of agricultural and road-clearing equipment. The American branch of Thyssen, Indian Head, is a manufacturer of pumps and related products, but has entered the information market in a big way, acquiring such databases and print products as Predicast, Information Handling Service, Capital Services International, the Congressional Record, and, as of 1980, BRS (Bibliographical Retrieval Service), one of three major vendors of online Services to U.S. libraries. In January 1985, International Thomson, a British firm which began in newspaper publishing, purchased UTLAS, one of the four major library networks in North America. What the consequences of the purchase will be is unsettling given the current trends in commercialization of information. On its way from newspapers to bibliographic utilities, Thomson has acquired major business and scientific information firms such as Carrollton Press, Research Publications, and Van Nostrand and Rinehold Co., Inc.

Not only are large companies in positions to purchase almost any smaller information service at will, but by doing so are forming concentrations in electronic information which is grounds for unease among information users. The commercialization trend is particularly noticeable in the quantity of learned/ scholarly society information products which have either died or been sold to commercial interests in recent years. In 1950, for example, of the abstracting services published, only 1.4% were commercially owned. By 1977, the private sector/commercial share in this market has risen to 53%.

The presence of financial giants in the marketplace and in the corridors of power can be considerable, and augers ill for information users. The electronic information industry, for example, was able to force the federal National Library of Medicine to release its database to commercial vendors, although NLM was permitted to continue providing information services to its own clients on the system it had developed. having acquired the NLM tapes, the market interest then forced NLM to raise its own database fees to clients on grounds that NLM was in unfair competition with the private sector.

Current developments in telematics clearly point to a time when the printed document will disappear as a source of research value. Instead, information will be available 'on demand' in electronic form. At this point, given current trends, electronic information suppliers will control the information resources of society as well as access to them. As Christopher Lasch has observed in his most recent book, "Advanced technologies of communication, which seem merely to facilitate the dissemination of information on a wider scale than was possible before, prove on closer examination to impede the circulation of ideas and to concentrate control over information in a handful of giant corporations." On a grand scale, this will have enormous consequences for higher education and the academic libraries which serve it.

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3. Barry Fast, unpublished manuscript, 1983. p. 5 (Courtesy of the author).

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7. Library of Congress Copyright Office. Library Reproduction of Copyrighted Works (17 U.S.C., 108). Appendix VI, Part I (New York Hearings). Washington, GPO, January 1984. p. 13.

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13. Association of Research Libraries. Systems and Procedures Exchange Center. Microcomputers in ARL Librarie. Washington, D.C., 1984. p. 1. (OMS Spec Kit #104)

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18. L. Estabrook. "The Library as a Socialist Institution in a Capitalist Environment" in Jana Varlejs, ed., The Economics of Information McFarland, 1982, p. 4.

19. For a survey of the Information Industry see The Knowledge 200. Knowledge Industry Publications, White Plains, N.Y., 1983. Profiles 200 largest information companies.

20. Harry Eat. "Special Libraries and Information Services and the Development of the U.K. Information Industry." AsLib Proceedings. 36:2 (February 1984), p. 69.

21. Ibid. p. 20

22. Christopher Lascah. The Minimal Self. New York, Norton, 1984. p. 26-27.

ELECTRONIC NETWORKING
AS AN AVENUE OF ENHANCED PROFESSIONAL INTERCHANGE

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What is an electronic network? How can it be applied most effectively to instructional, research and service functions of higher education? What are the criteria for the selection and adoption of networking software and hardware? Where can the most recent and beneficial information on electronic networking be found? These and other questions are the focus of the recently formed Electronic Networking (EN) Committee of the American Educational Research Association, Postsecondary Division (AERA-J). This author serves as chair of the EN Committee, and this paper is intended to report the basic information on establishing, using and benefiting from electronic networks identified by the Committee and to serve as a stimulus for discussion of the consequences for higher education and the professoriate of the general movement from a print to an electronic culture .

Electronic networking is communication between two or more people that involves one or more telecommunications media. In this sense, one medium of electronic networking used everyday is voice communication over the telephone. Today, we can also communicate over the telephone using computers as well. Such an electronic networking consists of a group of people in variety of locations. One of these people establishes and maintains his or her computer as the "host" computer. This computer may be a mainframe, a small office computer or a micro. There is electronic networking software available for most computers, including the popular IBM, Apple, and Radio Shack personal computers. Other individuals in the networking group communicate with each other through the host computer.

To communicate through the network, an individual turns on his or her computer from most any location, loads the appropriate communications program, turns on a telephone modem (connecting the computer to the phone lines), and then dials the telephone number of the host computer. When the host computer answers, the network member identifies him or herself and begins to communicate with other members of the network group. Depending upon the sophistication of the hardware and software used, this group can conference (or "talk") with one another, leave messages, post messages that the entire group can read, send a confidential letter from one member to another, instruct the computer to regularly remind other members of the group about some item, and a variety of other applications.

There are also commercial services which provide the host computer for electronic networking. Compuserve and The Source are two such commercial electronic services which provide subscribers the option of conferring with other members on topics of common interest. Both The Source and Compuserve offer international access to their systems. Table 1 on the following page lists those countries currently served by The Source and is illustrative of the potential for international communication through these networks. Through commercial electronic networks, there exists the potential for increased professional interchange; through locally established area networks, professors and researchers can communicate directly, without restrictions of membership and user fees. To understand the advantages and limitations of local area networks

Table 1. Foreign Access to The Source *

Argentina
Australia
Austria
Bahamas
Bahrain
Barbados
Belgium
Bermuda
Brazil
Canada
Chile
Columbia
Denmark
Dominican Republic
Finland
France
French Antilles
Germany (West)
Hong Kong
Hungary
Ireland
Israel
Italy
Japan
Korea
Kuwait
Luxembourg
Mexico
The Netherlands
New Zealand
Norway
Philippines
Portugal
Puerto Rico
Qatar
Saudi Arabia
Singapore
South Africa
Spain
Sweden
Switzerland
Taiwan
Thailand
United Arab Emirates
United Kingdom
United States
Virgin Islands

Note. From: The Source Manual: A Guide to Services for Members. McLean, VA: Source Telecomputing Corp., 1984.

and of commercially sponsored networks, it is helpful to compare these forms of communication and interchange with those that members of the professoriate traditionally rely upon.

After the second World War, the professoriate gained dominance over the curriculum in higher education through scholarly associations (Jencks and Riesman, 1968). Disciplinary associations provided avenues for faculty to exchange views regarding quality, structure and content of college programs.

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curriculum in higher education through scholarly associations (Jencks and Riesman, 1968). Disciplinary associations provided avenues for faculty to exchange views regarding quality, structure and content of college programs. The associations themselves often exerted a strong role in establishing standards by which university departments and programs might be judged by accrediting bodies. Scholarly journals, often sponsored by associations provided a vehicle for the exchange of research ideas, information and activities. Annual conventions and conferences of the associations became the basis for formal and informal networks of specialists within a discipline. The print culture was reinforced through these professional societies and associations. Papers were read at the meetings; activities of the associations were described in newsletters; research was printed in journals. Faculty promotion and tenure decisions became based on the print culture as they were evaluated by their peers on the extent of their publications. The strength of the disciplines, of the professoriate and of professional interchange relied heavily upon the printed page as a medium of communication.

During the 1970's and 1980's the power of the professoriate diminished considerably. Reduced resources of colleges and universities forced administrators to review academic programs and to judge curriculum, research and service activities on their economic merits to the institution rather than intrinsic merits to the advancement of the discipline. Reduced enrollments in some institutions further inhibited the breath and depth of curricular offerings within the disciplines. Reduced resources and the increased cost of travel restricted faculty participation in regional, national and international meetings. Increased costs of printing and materials inhibited the growth in professional journals and newsletters, forcing editors to place limits on page length and number of articles per issue. Stagnate or reduced budgets of libraries limited their ability to purchase journals and new books, and book sales and subscription rolls of the journals fell accordingly. These events of the past two decades have caused a major contraction in the extent and frequency of professional interchange between faculty.

The reduction of avenues of professional interchange has created a sense of place-bound isolation amongst the much of the professoriate and a readiness on the part of many faculty to seek new forms of communication with their colleagues. A most likely initial objective of faculty in the use of a new form of communication might be to strengthen the types of professional linkages with which they are already most accustomed: articles, papers, newsletters, memos and messages. After that objective has been met, then perhaps some will begin to examine their reliance on the print culture and begin to experiment with new applications of electronic networking. Nevertheless, the use of electronic networking will remain only ancillary to print media so long as the reward structure of the professoriate is so firmly married to the print culture. Given this limitation, an electronic culture will emerge and significantly impact the professional interchange of faculty on campuses throughout the world. The learned use of the telephone as a electronic medium is exemplary of this transition to electronic networking.

When we first used the telephone to communicate, we patterned our usage after informal face-to-face voice interchanges. The more we learned how to use the phone, the more we began to use it to replace letters, memos and notices. Now, we are beginning to use this form of electronic networking to convene twenty or a hundred people in conference sessions at professional meetings. Six sessions at the last AERA-J/ASHE Fall Conference linked groups located from New York to Wyoming by phone to symposium sessions based in San Francisco. Audio (telephone) conferencing, as a form of electronic networking, is now being used widely in the United States for credit and non-credit undergraduate, graduate, professional and continuing education (Lewis, 1983). It holds particular strength as a new form of inservice education and professional development (Ratcliff, 1983). As we learn the applications of a telecommunications medium, we begin to move away from the model after which it was patterned to a wider range of uses, not all of which could be readily achieved through any other means (Ratcliff, 1984).

If we already use networking through conferences and other professional associations and through informal and formal written and telephone conversations, why do we need electronic communication using computers? Like most innovations, proponents try to fashion the new medium after old ones with which we are familiar. The first horseless carriage resembled greatly the horse drawn carriage to a far greater degree than today's Corvette or Kenworth truck. Likewise, proponents of innovations tend to couch their promotions in language which compares the new technology with the old (de Sola Pool, 1982). So it is not surprising that electronic mail, for example, is being marketed commercially as a faster, more efficient and more reliable way to getting a letter from here to there.

Already a number of computer networks exist to serve specific purposes. For example, the EDLINE network serves as a vehicle for immediate and on-going dialog among members of the American Association of School Administrators, the Association of Educational Communication and Technology, and the National School Public Relations Association. A major objective of EDLINE is to provide a means for immediate and continuing dialogue on educational issues of interest to these organizations. Likewise, Special Net is sponsored by the National Association of State Directors of Special Education for the purpose of sharing resources and information among the many and varied professionals throughout the United States who serve special needs populations. Pierce (1984) describes and contrasts a number of these electronic networks, their purposes and their target audiences. Pierce and Cooley (1985) recently has demonstrated the use of an electronic network for the development of a jointly authored article; the two authors were separated by half a continent. The article illustrated the uses of the computer networking on The Forum - an electronic networking group of the American Educational Research Association on the Compuserve system.

When two researchers join together to interactively generate a journal article, it is itself is an act of translating the products of the emerging electronic culture for the traditional consumers of print culture. When two faculty members at diverse locations across the country or across the world join to electronically author an article, other members of the electronic network can contribute editorial comments, new drafts of the document, additional bibliographic resources, etc. The print culture process of communication is quite linear when compared to the dynamics of electronic networking. In the print culture, the author first outlines the flow of thoughts to occur in the article: that outline might be modified by the comments of the coauthors. Next, a draft of the paper is developed: each author preparing a section. After an initial draft, the paper may then be shared with the various authors for editing, embellishment and refinement. A final draft is mailed to a journal editor; the journal editor mails copies to the editorial review board for comments and judgment about publication. If the article is accepted for publication, substantial revision of the text may be requested by members of the review board. These suggestions are translated from review forms to a letter to the authors from the editor. If the paper is rejected, comments and feedback may or may not be provided to the authors. If the paper is accepted for publication, the editor will mail the authors galley proofs of the typesetting of the article as a form of final editorial review.

This print culture process of authoring, reviewing and editing may consume six months, a year or more. Only then do the thoughts of the authors reach the readers eyes. Only then may a reader write a letter to the editor commenting upon the ideas or research presented in the article. Only then may reader put into practice those ideas and findings which are reported in the research. Only then may the discipline in which the research is generated begin to advance. In an electronic network, the processes of authorship, of editorial review and refinement, of dissemination and of reaction and utilitization may occur within minutes of one another. The process of conveying an idea takes on new dimensions.

It is only after a technology begins to grow in usage than people begin to speculate and to experiment, creating new forms of communication. It was only after widespread car ownership and the development of a rudimentary road system that people began to think of the summer vacation trip in the car as a form of recreation. Likewise, as faculty and professional staff at colleges and universities become more familiar with the operation of computer and computer terminals, and as they become more knowledgeable in the use of electronic networking on campus, the desire to communicate with their colleagues between institutions will grow. As a result, newer stronger, more frequent exchanges of ideas, materials, and news will strengthen the interchange of ideas among the professoriate, thereby increasing the quality of teaching, learning and research in higher education.

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COMPUTER TRAINING FOR FACULTY

William E. Russell
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"One of the major problems we face in the 1980's is that so many computers will be built in the next decade that there will be a shortage of data to feed them. Professor Heinrich Applebaum, Director of the Computer Proliferation Center at Grogbottom, has voiced concern about the crisis and has urged a crash program to produce enough data to get our computers through the eighties." Thus writes columnist and satirist Art Buchwald in "The Great Data Famine." As ludicrous as it may sound to some, keeping computers busy is a task in the academic world. At all levels of education in the United States, the accessability of computers increases at a feverish pace. There are an estimated 484,000 computers in the public schools and by the end of the 85/86 school year, assuming a continuation of the pace, there will be over 1,000,000 (Ingersoll, 1984). Each of the past four years has witnessed a doubling of the numbers of computers. Figures for the college level are more elusive though certainly a comparable growth rate takes place. No college wants to be left behind as an important cultural change occurs. One study by a leading market research and consulting firm (Talmis, 1984) for major companies in the software publishing and computer hardware field predicts that 4.4 million college students will own microcomputers by 1987, a figure in excess of one-third of all students expected to be enrolled in either two or four year colleges. The trend has been established as student ownership of microcomputers tripled between 1982 and 1983, from about a quarter million to three-quarter million. According to the same report, the colleges and universities of the U.S. will have about one half milion micros by 1987. The computer industry having discovered a potentially gigantic and lucrative market, is relentlessly courting colleges and universities with generous discounts available for faculty and students.

There are two complex barriers with a host of adventitious pitfalls that stand as obstacles to the integration of computers in higher education. Each have been cited by authorities, though their impact seems transparent. The two factors are lack of quality software and lack of faculty training. The latter is discussed here. Every country, according to Bork (1984), faces the necessity of training teachers as well as the related problem that "current training programs leave much to be desired."

Though the training of faculty is a major goal, there is surprisingly little on the topic, particularly at the post-secondary level. The rest of this paper treats, under various headings, the training of faculty. Most of the ideas are drawn from articles written for the business community, a more experienced community in training methods and techniques. The research was done primarily to conceptualize and to design a faculty and staff training program for a small (2100 students) liberal arts oriented comprehensive college.

Faculty as Client

The goal is to help interested faculty learn computing and thus training must be accomodated to the vagaries and demands of the academic environment. This means flexibilty in scheduling as well as training methodolgy. Faculty first must be informed about the applications and skills that can be learned. The training coordinator has to choose from the available software often without thorough prior knowledge or benefit of examination, though there are several ways to make a selection more informed (Strauss,1984). Descriptions of available software should be sent to faculty-a periodic newsletter is a good vehicle-so that they will be aware of possiblities. Demonstrations of software for any interested faculty member are the next step. Training schedules need to be flexible, geared to those of the faculty rather than the trainer. Courses should be small, three or four faculty at a time with provisions for individual help if necessary. A session should be brief, perhaps an hour or a little more, and predominantly hands-on. Since practice is part of learning a skill, a loan policy of both software and hardware makes sense (Coopers and Lybrand,1983). Despite the informal appearance, the curriculum for all the course offerings should be fixed (Johnson,1984). Since a faculty training program is based on choice, users should have the option to learn what is judged essential and to decide when mastery is achieved.

What Content Should Be Taught

Educational computing journals and the proceedings of computing conferences offer pronouncements about the competencies for teachers particularly those at the precollege level (Rawitsch,1981;Cory,1983; Geib,1983;Poirot,1981;Moore,1984). There is a less extensive literature concerning the apposite training of college faculty. The authors of The Campus and the Microcomputer Revolution state apodictically that "knowledge about" and "work on" computers are necessary (Baldridge,1984). They prescribe a heavy dose in each category of learning. "Knowledge about" involves theory and information about computers while "work on" involves hands-on and mastery of specific software. A table adapted from the book summarizes the recommendations.

KNOWLEDGE ABOUT COMPUTERS	WORK ON COMPUTERS
1. how computers work	1. utilities
2. computer sizes, types, and functions	2. word processing
3. the range of software	3. simple graphics
4. criteria for selecting equipment	4. budget spreadsheets
5. knowledge of specific software packages	5. data base management systems
6. literature for more information	

Programming is noticeably absent from the list for it is judged not to be necesssary for most faculty. Since it is likely to "frighten, bore, and turn off some people we definitely think it should not be required as part of a general training program for your personnel"(Baldridge,1984) For a faculty member desirous of using CAI some level of programming knowledge may be demanded Author languages are easily learned generally with the aid of a manual and sufficient practice time The skills required are teaching skills such as questioning, explaining, and sequencing rather than programming ability Having available a faculty member familiar with the author language expedites learning

Another "less than programming" option is the learning of simple CAI models .The learner modifies and customizes programming models of specific applications, e.g. a generalized tutorial or drill and practice program changed to reflect the course content of an individual teacher (see Culp,1983) It is necessary to learn some of the features of the programming language but in a very practical and useful manner, one not subject to the maladies cited above

Among faculty, the greatest proportion of whom work with symbols and images rather than numbers, the most popular application is certainly word processing Additional practical training choices for faculty are the popular software groups: spreadsheets, graphics, and data base An initial effort based on these applications is a sound choice Each is relatively easy to learn and has an immediate usefulness for most faculty In addition, learning these software groups offers a gentle introduction to computers, "knowledge about" as well as" knowledge how."

Who Should Supply Training

A few years ago the neophyte did not have to worry about where to find training, none was available A dramatic change has occurred There exists a plethora of training options on every conceivable computing topic and at every skill level. In general, the three categories of instructional opportunities are: self-instruction, in-house and extra-mural training. Self-instructional books, generally enhanced manuals featuring examples, tutorials, and step-by-step instructions augmented with diagrams and reproductions of the appearance of the video screen, are available for many applications. Capitalizing on the need for instruction, particularly in the business community, organizations have entered the training field offering a generous selection of innovative and sometimes expensive programs. A roughly drawn list of outside sources available to college faculty follows:

Outside Sources of Training

Independent Computer Schools
Computer Stores
Computer - Based Training Programs
Colleges and Universities
Evening Programs in Public Schools
Vendor Supplied Video Seminars
Paid Consultants
Vendor Supplied Audio Seminars
Independent Organizations and Training Groups

The in-house trainer ought to keep track of these sources and procure catalogs and course outlines since some faculty have more esoteric training demands or interests than can be provided on campus. Individual faculty development projects also often find such material of assistance. The list fails to do justice to the variety and quantity of sources of computing education and training. The references cited give details as well as addresses of some sources(I'm Learning as Fast as I Can, 1982; Exner, 1984; Sheldon, 1983; Carrell, 1982).

An in-house program is the only apposite solution for many small colleges that depend upon their own personnel to supply the need for training. If the program is done well, there are several advantages to an in- house approach. One major advantage relates to computer psychology. Neophytes are more relaxed when working with people of their own background. High tech psychologists urge businesses to put training into the hands of peers who have themselves been trained in place of professional trainers or outside agencies "If there is an overlap in the values of the teacher and the student, it's less of a we/they type of relationship. That argues for secretaries training other secretaries and managers training other managers" (Schmidt,1985). The same may be true in academe. Faculty training faculty is an appropriate, available, and less expensive vehicle for computer training. There are other advantages to an in-house approach. The training can be customized and spread over a time period unlike many of the one to three day seminars sponsored by organizations travelling from city to city conducting an intensive workshop in a downtown motel. The microcomputer (and for this and several other reasons it's a good idea for a small campus to settle upon one model) is the actual model that will be used after the completion of training. Users are trained with the identical applications utilized on campus. Faculty will know what software is available as well as how to use it (Carrell,1984; Eaton,1984). This facilitates communication on campus; everyone knows the same spreadsheet, for example, and collegeal help is more likely to be available. A collegial help program, the concept of coaches, can be implemented in which in-house "experts" in a particular software group are key resources for others (Ryan,1983;Westrick,1984). Among any group of trainees "user experts" emerge who become quite proficient in a specific application, e.g., a graphics program or a word processing application. In a modern day equivalent to Lancastrian methodology, the "user expert" or coach can help to train others in the community, particularly those in the same discipline since computing needs are likely to be similar (Ryan,1983;Scherer,1983;Westrick,1984). A survey in industry indicates that "users thoughout an organization tend to reinvent the wheel by not sharing knowledge or access to tools, methods, and vendors. Because of their isolation many users learn through an expensive process of trial and error. In companies surveyed there seems to be a trend toward formal user training programs, help desks, user groups, a personal computer library and demonstration facilities"(Guimaraes,1984,Eaton,1984). An in -house training program with analogous services can offset these maladies endemic to microcomputing with its inherent tendency to create islands of computing with users isolated one from another to the detriment of all. Training, according to some, also brings affective benefits, kindles enthusiam, and heightens morale in an organization (Baldridge,1984,Westrick,1984).

How To Train

Companies employ a variety of methods to train people to use personal computers. No single method seems to predominate. This fact that Edmonston (1984) discovered in his survey of industry methods and practices led him to conclude that training people to use personal computers is a difficult task. Rawitsch (1981) asserts that teaching educators about computing is "a different ballgame" and calls for a reexamination of the instructional approaches for training professional educators. Rawitsch cites three characteristics at odds with the computer training of educators and suggests a remedial strategy for each. Computing is "foreign turf" to most faculty and is judged as "someone else's" discipline. In addition computing is seen not in an integrated fashion, but as "a collection of little pieces." Not overwhelming trainees with unnecessaary technical information and cutting down on jargon helps eliminate obstacles. Culp (1983)in different but applicable context warns trainers to consider the "Gluteal Limits" of trainees and gives the "Rule of the Rear," a time limitation on lessons to 30 minutes or less. Dight (1984) offers the generalization that educators themselves may not make good trainers "Some educators are used to taking a textbook and teaching from it. This is not data processing training." In additon the "teach from the text" method certainly is not the way training is practiced in corporations.

When one considers learning about computers and software applications the next thought turns quite automatically to computer manuals. Almost universally they are graded on a scale of "bad to terrible." The first law of computing is that computer people do not talk a natural human language; they are not, according to Doonesbury, "consumer compatible liveware." These same people write the manuals described as "indescipherable" (Maranoff,1984) and "first cousins to IRS publications-totally obscure"(Lehrman,1984). An innovative and creative trainer achieved remarkable results in training methods by writing abbreviated manuals for the manuals, i.e. a brief booklet that would sequence the content of the manual and make hardware and software operating suggestions (Young,1984). Another creative trainer, after observing the actual behavior of trainees, reduced the manual to a single page, termed a "cheat sheet," with wide margins and few words. Trainees would fill this page with notes and use the sheet for reference. Manuals are necessary especially for those entrusted with training, but by the means such as those indicated they can be unlocked and made decipherable.

Learners do have a penchant for not opening documentation (Scherer,1983,Young,1984).They are however willing and eager to listen and to observe, expecting a subsequent opportunity to try on their own. A "show and tell" approach, demonstration followed by supervized practice fits in with observed behavior. Since this is the more natural way to learn computing the trainer should build on it with the caution that demonstrations should be limited in scope (Scherer,1983), too much overwhelms, and carefully prepared by a knowledgeable person. Paradoxically doing less seems to produce greater results. A minimilist approach "gambles on the expectation that if you give the learner less (less to read, less overhead, less to get tangled in), the learner will achieve more."(Carroll,1984)This philosophy based on wide experience in training contends that slashing verbiage can result in stronger learning. Not much attention is given to explanation; hence the trainer can expect every possible error, but the trainees learn. Trainees according to Carroll don't appreciate "overviews, reviews, and previews; they want to do things."

To summarize, demonstration and practice seem to be key, a means to make computing distinguishable from magic.

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INCREASING STUDENTS' INVOLVEMENT IN LEARNING

WEDNESDAY, 3 JULY

1530 - 1700

A CONCEPTUAL FRAMEWORK FOR ENHANCING THE QUALITY OF THE TEACHING/LEARNING PROCESS

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"Teaching is a healing art." Harold Taylor

"The fruit of teaching is learning." Polly Berrien Berends

Teaching is learning. Learning is teaching. They are two interwoven processes requiring different yet interrelated and interdependent tasks of one wholistic process. The essence of the teaching/learning process is a dynamic interacting relationship between students and faculty. They bring to the educational arena their whole selves -- body, mind, emotions, and spirit (Buber, 1965, Combs, 1965 , and others). The thrust of this paper is the relevance of the social work concept of parallel process as a fruitful conceptual framework for enhancing the quality of the teaching/learning process in higher education. The findings of a research study support this contention.

Education and social work share the common outcome goals of learning and growth for the purpose of enriching the quality of life for individuals and society. Both professions are healing arts intertwined with science.

The Concept of Parallel Process

Schwartz (1961) coined the term "parallel process" to depict the essence of some key social work generic practice principles. The concept provides a framework for delineating worker/client roles and tasks in the two-way helping/healing process. Shulman (1968), a disciple of Schwartz, furthered understanding of the process in the practice arena. The concept comprises three interacting practice principles, namely: 1) the worker and client have a common goal; 2) the worker starts where the client is; and 3) the worker and client have different yet interrelated and interdependent tasks and one begins where the other leaves off. The needs of the client are translated into tasks. The principles provide benchmarks for on-going monitoring of the process in order to be on the constant alert to when the tasks may have polarized, the common goal divergent, or the worker is too far ahead or behind the client. The tasks need to be adjusted as the client learns and grows if the dynamic process is to remain parallel and fruitful. Parallel process principles are rooted in social work's overarching spiritual value of respect for the dignity and worth of every human being.

Relevance of Parallel Process for Higher Education

> The general attitude in higher education today is one of student "vs" faculty, rather than student "with" faculty....One is "taken to" learning by the hand, rather than "guided toward" knowledge by desire. Professors have learned this way, and the majority of them carry this "opposition learning" to the student ....In my mind, the two most basic....most general, qualities that should exist in learning, are freedom and responsibility. Freedom to relax and become "swept up" by a stimulating environment; to become involved, to be able to give to as well as to take from.
>
> A 1969 graduate student (Rogers,1969)

This 1969 student's cry of pain, disillusionment, and yearning for what could/should be taking place in education expresses the often unheard pleas of countless students. Many contemporary students tend to have behavioral responses to this unwanted yet enduring dilemma that are different from those who traveled the path before them. On the other side of the same coin, many faculty also experience pain, disillusionment, frustration, and too often burn-out when the teaching/learning process breaks down. Committed faculty and students -- and they are legion -- share common goals and needs for meaning, purpose, learning, growth, and pursuit of academic excellence. Parallel process is a concept that addresses these common needs of student and faculty for it requires that they work together in concert toward a common goal. The process also fosters the development of qualities considered to be essential for effective teaching.

A growing number of research findings support the contention that no one criterion is a valid measure of teacher effectiveness. These studies led to conclusions that effective teachers embrace intertwining growth-producing attitudes, values, goals, behaviors, and skill in creating a psychological environment that stimulates learning (See Hanna, 1984, for a survey of relevant research studies and Truax and Carkuff, 1967). Many authors have argued passionately about the relevance of these research findings (Dewey, 1916, Kohl, 1967, Holt, 1969, authors previously cited, and countless others). They seem to have a conscious or inconscious spiritual perspective of education as do the teacher traits revealed by research.

Overview: Research Design

Purpose: The purpose of this study was to evaluate the impact of parallel process as a conceptual framework had on the quality of the teaching/learning process from the perspective of students. Three objectives were defined. They are delineated with the presentation of the results.

Methodology: Applied research in the form of program evaluation was selected as the most appropriate for the nature and purpose of this study. Anonymous evaluations and on-going feedback of students over a period of years led to the speculation that the results would be highly positive.

Sampling and Instrument: The target population comprised graduate and undergraduate social work students aged 18 - 50+ who took courses with the author, who employed parallel process as a conceptual framework, in the Spring 1984 semester and were on campus in December 1984. All students who met these criteria were included in the sample. A structured questionnaire was given to them in several small groups because it was not possible to gather them at one Responses were submitted after the meeting in order to encourage candid responses. Confidentiality , purpose, and use of data were discussed.

Reliability and Validity: Efforts were made to minimize the inherent limitations of the chosen methodology. Language barriers were minimal since the students had been exposed to the terminology in class. Consistency and the probability of a high return rate were increased through the procedures for distribution of the questionnaire and allowance for voluntary compliance. Content validity was increased and the chance of bias reduced through the use of items based on the objective parallel process principles. Also, the items were related to the study objectives. There were four response categories and when appropriate, "other" was a given item. The instrument was pretested with the first group. No items were in need of revision.

Results and Discussion

Demographic Profile: Of the 38 students in the sample, 16 (100%) of the first year graduate and 14 (64%) of the undergraduate students responded. The 30 respondents represented an 80% rate of return. The 25 (80%) female and 5 (17%) male students ranged in age from the 18-21 age bracket to 50 plus. This gender and age span distribution reflected ratios comparable to the university-wide and social work student bodies.

The difference in ages of the undergraduate and graduate students was slight. Twenty (67%) were in the 22-29 age bracket; 6 (20%) were over 40; and only 4 (13%) were age 18 - 22. One of the 2 students age 50 + was an undergraduate and the other was a graduate student.

The sample seems to reflect the widespread trend of a shift from a majority of a student body in the traditional age bracket to a closer balance between this group and mature responsible adult learners. It is interesting to note that 100% of the graduate students responded. The findings offer no evidence to support any interpretation.

Organization of Displays: The results of the three outcome objectives are presented sequentially for each item on the questionnaire because the items further explicate the ways parallel process principles were operationalized. Also, this will avoid redundancy.

Integer scores were assigned to denote variable levels of strength of each response category for each item. Since less than 60% is the traditional and prevailing failing grade in education this criterion provided the rationale for determining that less than 60% reponse to an item reflected a negative level of strength for that response category to the item.

Keys and Scoring:

Response Category	**Meaning of Response**
Y - Yes	Highly Positive
SD - To Some Degree	Positive
U - Unsure	Neutral
N - No	Negative

Category Responses		**Strength Score**	**Meaning of Score**
No.	**%**		
30	100%	5.0	Superior
27-29	90-99%	4.8	Very Strong
24-26	80-89%	4.6	Strong
21-23	70-79%	4.4	Moderate
18-20	60-69%	4.2	Weak
under 18	under 60%	4.0	Negative

Objective 1: to learn to what degree students affirm that the instructor utilized the concept of parallel process and actualized the intended ways of operationalizing its principles

Table 1. Category Responses and Strength Scores for Objective 1.

	Y		**SD**		**U**		**N**	
Principle A: The instructor and student have a common goal.	**#**	**S**	**#**	**S**	**#**	**S**	**#**	**S**
1. My goal was successful attainment of the core knowledge/skills a s.w. needs in order to work with and in groups to be reflected in my grade	25	4.6	5	0	0	0	0	0
2. the instructor communicated and demonstrated her goal was the students' successful attainment of the core knowledge/skills to work with and in groups	29	4.8	0	0	1	0	0	0
3. The instructor communicated and demonstrated commitment to the common goal:								
a. through her attitudes	30	5.0	0	0	0	0	0	0
b. through direct statements	26	4.6	0	0	6	0	0	0

c. through her actions.	28	4.8	0	0	2	0	0	0
* d. other................................								

Principle B: The instructor starts where the student is. The instructor did this by:

4. providing me with tools and resources to assess my starting levels of skills from which to select 2 goals important enough to me to commit myself to taking the necessary risks in class	29	4.8	1	0	0	0	0	0
5. giving feedback on take-home exams and other work and the opportunity to use it to improve my levels of understanding and skills	26	4.6	4	0	0	0	0	0
6. giving options that allowed me to select those most congruent with my style of learning and demonstration of what I learned.	24	4.6	5	0	1	0	0	0
7. adjusting time spent on a topic based on student feedback	25	4.6	4	0	1	0	0	0
*8. Other................................								

* 4d. 1)"empathy toward students"
2)"availability to students outside of
3)"she listens to others' views
* 8. 1)"supported risk-taking
2)"did not feel pressured by grades; emphasis was on learning and grade served as a measure of progress"

Principle C: The instructor and students have different but interrelated and interdependent tasks to do to work toward the common goal; one begins where the other leaves off.

9. My tasks as student were:

a. assume responsibility for my own learning and growth	27	4.8	3	0	0	0	0	0
b. take the necessary risks to attain my goals	25	4.6	4	0	0	0	0	0
c. utilize the resources, tools, and assignments given for my learning and growth	28	4.8	2	0	0	0	0	0
d. engage myself in the structured learning tasks and activities in/out of class	28	4.8	2	0	0	0	0	0
e. give and receive growth-producing feedback for my own growth and that of my peers and instructor	30	0	0	0	0	0	0	0
f. assume responsibility for making decisions and behaviors that contribute to my learning and growth	28	2	0	0	0	0	0	0
g. Other..................................								

1.The instructor's tasks were to:

a. define the knowledge/skills students need to learn and be able to do related to	27	4.8	3	0	0	0	0	0

the purpose of the course								
b. define the tasks of the instructor and students necessary to attain the common goal	25	4.6	4	0	0	0	0	0
c. respect students as adult learners committed to and able to assume responsibility for their own learning and growth	30	0	0	0	0	0	0	0
d. give growth-producing feedback to students and offer a process for use of the feedback to further the students' learning and growth	29	4.8	0	0	0	0	0	0
e. organize and explain theories and processes in texts in a way that helps to illuminate them and facilitates students' understanding	21	4.2	0	0	0	0	0	0
f. provide assignments, structured learning tasks, tools, and resources that assist and support student efforts to learn	24	4.6	0	0	0	0	0	0
g. offer optional ways for the student to demonstrate knowledge gained and skills developed	27	4.8	3	0	0	0	0	0
h. elicit and respond to student feedback about what helps or hinders learning	27	4.8	3	0	0	0	0	0
i. establish an attitudinal and psychological climate that maximizes freedom to learn within clearly defined limits	25	4.6	4	0	1	0	0	0
j serve as a model of that which the student is expected to learn and to be student is expected to learn and to be able to do								
k. be available for consultation	30	0	0	0	0	0	0	0
l. Other......................................								

Objective 2: to gain student assessments of how well parallel process principles and their intended outcome goals related to enhancement of the teaching/learning process were actualized and to identify the outcomes students perceived to have had the most significant impact on their learning and growth

Table 2. Number of Category Responses and Response Strength Scores

	V		SD		U		N	
Items (12 -20)	**#**	**S**	**#**	**S**	**#**	**S**	**#**	**S**
The use of parallel process in this course:								
12. supported my efforts to assume responsibility for my own learning and growth	25	4.4	4	0	1	0	0	0
13. supported my desire to take risks in order to further my learning and growth	27	4.8	2	0	1	0	0	0
14. helped me to gain a basic understanding of theory, process, and their use in practice in a way that made sense to me	18	4.2	11	0	1	0	0	0
15. reduced non-productive anxiety	20	4.2	1	0	1	0	0	0
16. increased retention of learnings more than retained in all other courses taken where	21	4.2	7	1	0	0	0	0

parallel process was not utilized								
17. challenged me to:								
** a. think	28	4.8	2	0	0	0	0	0
** b. risk	27	4.8	2	1	0	0	0	0
c. share my own insights, perspectives, opinions, and rationale	27	4.8	2	1	0	1	0	0
d. want to master the orderly process of professional decision-making	23	4.2	4	0	3	0	0	0
18.contributed to my self-esteem and confidence that I could attain success in meeting my learning goals for this course	24	4.4	9	0	0	0	0	0
19. helped me to understand the concept of parallel process from the perspective of the client	22	4.4	7	0	0	0	0	0
20. The aspects of parallel process that had a significant impact on my learning and growth in this courses were:								
a. the student is respected as an adult learner capable of assuming responsibility for her/his own learning	30	5.0	0	0	0	0	0	0
b. reduction of non-productive anxiety	19	4.2	9	0	0	0	1	0
c. the freedom to learn within clearly	25	4.6	4	0	1	0	0	0
d. retention of learning	22	4.4	7	0	1	0	0	0
e. instructor and students have a common goal	27	4.8	3	0	0	0	0	0
f. instructor and students have different but interrelated and interdependent tasks; one begins where the other leaves off	22	4.2	4	0	2	0	2	0
g.the instructor starts where the student is	26	4.6	3	0	1	0	0	0
h. Other.................................								

Objective 3: to gain student opinions about the generalized value of parallel process as a conceptual framework for improving the quality of the teaching/learning process in higher education

Item 21 addressed this objective. It was in the form of a question:

> The quality of teaching/learning in Higher Education would be more productive if all instructors understood and utilized the social work concept of parallel process as a framework for the teaching/learning process.

All but one student's response was "Yes" and the one checked "To Some Degree."

Five (17%) of the students volunteered comments for Item 22 which was "Other."

The comments were as follows:

1. "should demand that writing skills be used -- no multiple choice exams! Areas should be open for students to think, should not be penalized because they don't want to give back just what they have read"
2. "a method that is responsive to the uniqueness of the group -- loosens rigid boundaries; encourages and motivates response to the teaching/learning

process"
3. "The quality of teaching/learning will be more productive when students are respected as adults."
4. "As a student, especially a grad student, you don't feel as vulnerable when the parallel process is used. You are also able to utilize other students' abilities and experience through parallel process."

Discussion

The results provided rich evidence about the nature and quality of the fruits students felt they gained from the author's use of parallel process as a conceptual framework as a monitoring tool for on-going assessment of a parallel teaching/learning process that aided her in actualizing her intentionality, and benchmark. In many ways it served as a mentor.

The results provided richevidence about the nature and quality of the fruits student respondents felt they gained. They gave very strong affirmation for the value of parallel process principles as a conceptual framework for higher education and implied it was at the other end of the pole from "opposition learning." Almost every item for three objectives had strong to very strong scores. The respondents affirmed that the concept and ways of operationalizing the principles had a very significant impact on their learning and growth; there was a high level of retention of learning; they were challended to thin, risk, and share; the felt respected and affirmed as responsible adult learners; their self-esteem was enhanced; and they understood the parallel yet different tasks of student and instructor; and felt they and the instructor worked in concert toward the common goals.

The structure of the instrument is such that methodology, attitudes, behaviors, goals, and values can be looked at in clusters. The results from analyzing the date by clusters revealed that these are congruent with the criteria previouly cited research findings conclude are the criteria for effective teaching. The best of theories cannot impose attitudes, values, goals, or behaviors on a human being. Since these seem to be the essential ingredients for fruitful results from parallel process, the concept has its greatest value for those who have these traits and desire to maximize their use in the classroom , to have benchmarks for their intentionality, and to generate ways to operationalize their goals.

Conclusions

The results provide convincing evidence that parallel process principles provide a conceptual framework that will enhance the quality of the teaching/learning proces in higher education. The small sample size begs for further research.

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CLASS PRODUCTIVITY, EFFICIENCY AND EFFECTIVENESS THROUGH SYSTEMATIC INSTRUCTIONAL DEVELOPMENT

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THE CHALLENGE

Ever have to develop a new course or modify an existing one? Are you now faced with doing more with less in the classroom setting? Have you decided to improve your teaching in the college or university but are not quite sure where you might start? Are you interested in hearing what others have done which might help you consider some alternatives? Would you like to be more productive?

Teaching and Productivity. Productivity and teaching may be like oil and water and not mix. After all, is not productivity an impersonal scheme concerned only with obtaining more work and output for fewer dollars? Certainly output and costs are part of the productivity puzzle, but the broader issue of quality is also involved. First, there is the quality of the product produced and second, the quality of life that can be improved because of efficiency and savings in dollars, time, and material. At this time when SAT scores are low, money tight, and classes large, it may be a good educational strategy to look at some ways that productivity can be successfully implemented in the classrooms of colleges and university.

Traditional Attempts. In higher education one of the primary or most common attempts to be more "productive" has been to combine several small sections in a larger lecture hall. True, there are reductions in the numbers of instructors to simply lecture...and probably a related reduction in the output of students. And, when it comes to labor-intensive courses like business communication, English, and technical report writing, student output is the critical educational goal.

The Setting. A few years ago the Business faculty at our institution decided that since our Business students were exceedingly weak in written and oral communication skills (not much unlike students in a variety of disciplines), that a required course in Business Communications should be re-instituted. The faculty member responsible for this area immediately thought of building an empire of six or seven full-time continuing faculty who could teach small groups of students to think, write and talk. After all, that is the way Business Communications has always been taught.

However, the faculty placed a requisite on their decision — teach the course, but no increases in faculty lines. Suddenly the faculty member was facing the prospect of 2,500 Business students who would write papers in Business Communications—and the prospect of reading, critiquing and grading those numbers of papers became a definite stimulus to consider alternatives.

Resources. Faced with such a formidable challenge, where does one turn to seek additional ideas or alternatives to tradition? Fortunately our institution has a Learning Resources Service devoted to the support of instruction. One of many components to the program is the instuctional development unit. Instructional development faculty at Learning Resources serve as consultants to faculty in the various Schools and Colleges of the university. A teamwork approach to solving instructional challenges is established. The faculty member is the content expert who provides subject matter expertise and the framework for the course development. The instructional developer provides insight into not only a systematic approach to the development of the instruction, but also serves as a resource person for the wide variety of instructional strategies which might best fit the unique nature of the faculty member, the course content, and the students. Other technical sections within Learning Resouces Service then provide the necssary technical expertise and products to support instyructional strategies.

Our Efforts. With the cooperation of the departments, the college and the University, we have been able to develop, test, and refine an effective, efficient and economic way to teach the course. The strategies seem applicable to other traditionally labor intensive courses.

There are no secret ingredients except the focus on productivity and quality. We have taken ideas from a variety of areas--principles from the world of business, systematization and innovation from instructional development, and combined all to meet the challenges and restrictions found in the academic world. And, we have combined these in a successful manner, orchestrated with techniques for student motivation, and added some creativity. This was done always with an emphasis upon reducing the faculty's direct teaching time while maximizing the student's experience and the student's performance. Reduced direct teaching time, increased assignments, increased quality and increased favorable student feedback...that's productivity anyway you cut the pie.

CLASS PRODUCTIVITY

Overview. To meet the needs of the students and their future employers, constant communication and evaluation are necessary. If students are to improve their communication skills it is vital that they communicate and receive feedback. College students do not improve their communications by just reading books and attending lectures; they must communicate. These needs are efficiently, effectively and productively met by applying business principles of management with results.

Performance. More students complete more assignments; 288 students can each complete 60+ assignments using only 1.5 FTE professional faculty. This is accomplished with specific procedures, careful planning of each work group session, providing materials that students access on their own time, and the individual taping of instructor comments to students.

Skills. Students quickly master and effectively use their language; in order to pass the course students must pass a five-part language competency exam by the eighth week of the course or be forced to drop the course. When finally forced to learn some basic grammar, students do it! A variety of "helps" are provided in the Self Instruction Center for students to use on their own time. The language skill items are handled by the students outside the class because the course is a management course in the College of Business and Administration—not an English class.

BASIC ELEMENTS

There are some basic elements to our approach: practical short assignments; creative mass lectures; intensive work group sessions; staff coordination; student responsibility; and numerous instructional materials; a Self Instruction Center; TIFS; audiotape test feedback; student work critique; and student motivation and personal development. Let's look at each of these briefly:

Practical Short Assignments. For the numerous assignments, we are convinced that less is better; no assignment ever exceeds one page. The assignments are interesting, are applied to the realities of the business organization and in an intriguing manner entwine the student's individual career path.

Creative Mass Lectures. There is nothing new in large lectures except often they are not creative. We use student's name, use writing exercises in the mass lecture, and use the communication techniques of modern business to relate the message. It is possible to achieve as much with a group of 300 as you achieve with 30 students in a lecture setting.

Intensive Workgroup Sessions. Student meet in small groups once each week in a unique setting. Students give speeches, receive communication briefings, and work in small groups. These sessions are highly structured (not laissez faire labs) and everyone agrees that in these 50 minutes a couple of hours of work are accomplished. It just involves good planning.

Staff Coordination. All people involved in the course meet once each week for 50 minutes. Plans are reviewed; problems are addressed; a careful monitoring of the work of all is achieved. Again, there is nothing new here--it's basic management that we sometimes hesitate to apply in higher education.

Student Responsibility. Students say they want it and therefore why not let them accept it? — isn't that the way it should be? — especially for aspiring managers. Here the productivity formula becomes simple — the greater the load the student carries the easier it is to increase the faculty's productivity — be on time to class, no late assignments, everything is typed and no slop can be submitted plus a variety of other procedures that can save faculty time.

Instructional Materials. A variety of instructional materials are used to allow the students, on their own time, to obtain additional substantive information they need. For instance, many special topics are covered both on audio and on video tape as well as via slide-tape modules. Exam review and exam feedback are all handled on slides or on tape.

The Self Instruction Center. The Self Instruction Center is used continually by students on their own time. The importance of that use is demonstrated first by the fact that many usually one class meeting day per week is canceled and students can then plan to go to the center as their own needs dictate. For this course there are a variety of materials for students including: in-house produced study modules; slide tape items; video tape materials; the TIFS (Tests with Instructional Feedback on Slides) etc. Students go the the center to learn grammar in order to pass the competency exams; they listen to audio tapes on special topics; they view videotapes of presentations (theirs, others, or models), they view videotapes of former students who explain how to succeed in this course or how they have used their PACDs to obtain employment.

TIFS. The Tests with Instructional Feedback on Slides (F. D. Brown and T. O. Mitchell. "TIFS: A Low-cost, High-usage Technology for Instructional Feedback." Educational Technology. Vol. XIX, (5) May, 1979, pp. 37-39.) allow students the opportunity to review and prepare for exams. The quizzes cover the various aspects of course content. Students work on these materials on their own time; this reduces need to take class time for repetitive review of substantive materials.

Audiotape Test Feedback. All examination questions are answered on tape. The course coordinator reads through hourly examinations question by question, provides the correct answer and explains why it is correct. This saves enormous amounts of class and office time for the individual instructors. In addition the process helps improve test item development and reduces the embarrassment of dealing with errors in test construction. Since the accessibility of the test tapes can be controlled, students can immediately go to listen (and learn) as soon as they have finished taking the exam.

Student Work Critiques. Students turn in with each assignment (submitted only during the small group session) an audiotape with their name on it. The instructor first reviews the student's product and makes the briefest of notations for the instructor's reference. Using a tape recorder, the instructor then talks directly to the student. Coaching techniques now common in the business world are used to provide constructive comments and feedback. These comments are recorded directly on the student's audiotape for later listening by the student. Progress or the lack of it is noted on a summation sheet within each individual student's assignment folder. Students view this feedback as prompt, personal and much more extensive than the traditional red marks usually found on student's work.

Motivation and Personal Development. In addition to the numerous individual assignments, students identify and pursue realistic career objectives. The on-going Professional and Career Development (PACD) assignment is an intriguing way to get students interested in communications because they see the results of communicating effectively. This assignment comes in any one of three similar designs: 1) for juniors and seniors seeking a career start; 2) for freshmen and sophomores considering an internship possibililty; and 3) for any student interested in becoming an entrepreneur and in starting a business. The PACD, when completed, represents a long report. The individual pieces of the PACD include virtually all of the communications a student needs to initiate to get a job—obtain initial information sources; write letters of inquiry; conduct telephone follow-ups; initiate conferences with professionals in the field; obtain and complete application forms; prepare thank-you letters; make contacts in the professions, etc.

RECOGNITION

First, and probably most important, students' evaluations and comments have been most positive. Formative evaluations (those conducted typically around midterm for the purpose of learning how things are progressing) and summative evaluations (conducted around end of the course to evaluate overall how things went) have consistently been quite positive... and extremely positive feedback has been received from student alumni who have entered the working world. Student evaluations acknowledge the quantity of quality work that is expected, and most report appreciation for the benefits of stretching to meet the challenges.

The faculty involved with the course all comment quite favorably throughout the course. Time is efficiently used, there is a common standard for professionalism and student achievement, and the concentration on providing feedback to students to help them improve all join to achieve important goals.

The American Productivity Center cites our efforts in their Worth Looking Into Column as "Southern Illinois University at Carbondale has tackled the usually labor intensive demands of teaching business communications and devised an effective, cost efficient teaching strategy." (PRODUCTIVITY LETTER, a publication of the American Productivity Center, Houston, TX. Nov/Dec-1983. p. 7).

Also, the Southern Business Administration Association conducted a national competition for innovative teaching programs. This course was recognized in New Orleans, Louisiana, as the national award winner in November, 1984.

An Opportunity. One of the hallmarks of the SBAA award is that an emphasis is placed on sharing teaching ideas with other professionals. We at SIU-C are most anxious to share our ideas, our approaches and our techniques with others. The Eleventh International Conference on Improving University Teaching presents an opportunity for us to meet with you, to share, and to discuss options...all designed to meet the demands of productivity in improving university teaching.

EXPERIMENTAL TEACHER/LEARNER INTERFACE MODEL FOR HIGHER EDUCATION: THE T DESIGN

Dr. Harold L. Hayes
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I. PROBLEM

Quality and Design

My thinking regarding the lack of design and quality in modern teaching and the subsequent consequences is articulated nicely by Reichenbach's eloquent description of errant philosophers: "The philosopher (read teacher) had committed the mistake of regarding as a vision or ideas, or as laws of reason, what is actually the product of habit . . . what he regarded as laws of reason was actually a conditioning of human imagination by the physical and educational (italics, mine) structure of the environment . . . (Reichenbach, 1968, p. 141).

Such mistakes in thinking afflict teachers as well as philosophers. And when such thinking distorts the teacher's communication and/or view of the student, then edcuation is distorted. Thus, where these conditions exist, subtle though they may be, the impact for higher education is diminished teaching effectiveness, and reduced quality.

To correct these problems we must focus our attention upon an aspect of instructional design that seems to get little attention. The emphasis presently appears to be upon what is done to the student as opposed to making the student a participant in his own education. Specifically, we must focus on the teacher/learner interface. An entire issue of Higher Education in Europe was recently devoted to a call for, among other things, research to improve teaching and learning in higher education (Eberhard, et.al., 1983). Great care in the quality and design of interface heuristics can go far in overcoming the problems in higher education. We can produce competent, creative and productive graduates by enhancing two-way interaction at the teacher/learner interface.

II. The Teacher/Learner Interface: An Interaction Model for Learning

Human beings in their natural habitat adapt to the structures and forces impacting at their interface with reality. This adaptive process is highly effective as evidenced by the survival and high level achievements of the species.

As students, humans must also adapt to the intellectual environment impacting the teacher/learner interface. This interface, in many instances, however, is neither very exciting nor condusive to the stimulation of intellectual achievement.

The cause of this condition is two fold: first, since modern children are reared in the context of systems which are incomprehensible except in symbolic form, they are in effect isolated from the reality interfaces that will influence their achievements. Also, they are not reared to develop early intellectual and academic strength of a sophisticated degree, so they have little to bring to the teacher/learner interface. Secondly, our teachers are not prepared by university training to understand the nature of this interface and cannot utilize even those resources which the students do bring to the learning situation.

Under the present teacher/learner structure, the teacher simply presents the learner with a large mass of poorly differentiated information. The quantity of data presented being based upon available time blocks rather than upon the nature of the teacher/learner interface. The learner is expected to process this undifferentiated information and present it back to the teacher at a later date in a relatively unchanged form. This represents mastery within the educational structure and for the most part is limited to the symbolic level. Thus, little opportunity exists to form connections between the symbolic and the real.

Such a process leads to boredom for both the teacher and learner. The learner becomes apathetic and the teacher burns out or simply resorts to bemoaning the poor quality of students while his classes continue to degenerate.

The question we need to ask is: if we could apply to the learning situation those natural adaptive processes alluded to above, could we achieve significant improvements in learning and thinking?

The answer is a confident yes. For while it is unlikely that we will be able to improve the quality of the students coming into our college classrooms, we can certainly do a great deal to improve what happens after the student reaches those classrooms if we begin training the teacher to effectively understand and utilize the teacher/learner interface. The approach taken here is to design *heuristics* (Glorioso, 1980) that meet this specific need.

The heart of this natural learning process, as we have identified it, is the *T* design, a subcomponent of the *Genius Factors* approach (Hayes, 1980). Application of the *T* design to the teacher/learner interface will result in improved educational achievement by college level students in both scientific and technical areas as well as the liberal arts.

III. The Experimental Model

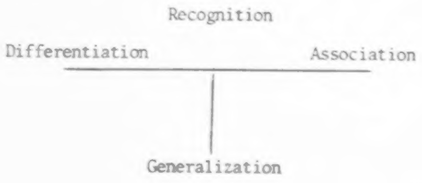
The model must enable the teacher to be thorough in planning, preparation, application and evaluation. Precedent for such models is well established (Reigeluth, 1983).

The model, also, must enable the learner and teacher, i.e. the performers, to be thorough in study, reflection, questioning, testing, self correction and self control as well as have a conscious awareness of the limits, options and risks involved in a problem. The outcomes include a stronger knowledge base in general as well as greater precision and power in decision making, problem solving and learning.

To achieve these goals, it was essential to build an active divergence that would not lead into dogmatic blind alleys but would yield intellectual processes that would be fruitful in problem solving, decision making and creative intelligence.

The outcome of this research effort was the development of a training model, RAMCIN*, which has been described elsewhere (Hayes, 1984a, 1984b). The T is a fundamental component of RAMCIN. The purpose of this paper is to describe briefly the application of the T design and the potential benefits in its application to higher education.

The T design in the nucleus of thinking and communication power and utilizes several well known psychological processes to achieve its power (figure 1).



The T Design
Figure 1

While the concepts incorporated by the T are well known, a brief description of their functions and relations in the T design will be of help in understanding the thrust of this research.

Recognition is in a sense the lead concept in the design. The recognition processes (schemes) are those activated by the familar cues in any experience. To the extent that some components of an experience are new the individual is forced to expand his old experiences to bring some interpretation or meaning to the new and unknown.

The fact that a student may have limited experiences vis à vis, a new course, requires us to consider how the student sees our course and the information presented

*Rapid Achievement Model for Creative Intelligence Now in various phases of study. A traditional means of measuring initial student recognition is the pretest which is quite superficial in that it only tells the teacher whether the students know specific details but tells nothing about perceptions, feelings and attitudes toward the course. Is it possible that the university teacher never really sees his students? Hopefully, the T design and the attendant auxillary heuristics will make it possible for the teacher to quickly and informally assess his/her students' learning/thinking processes. Further, when lessons are prepared and presented in accord with the design, the learner is being impacted by a powerful intellectual metamodel capable of stimulating additional intellectual power. As the learner assimilates the model he/she becomes a more active and powerful participant in the teacher/learner interaction. Thus, the T serves to improve both the system of education and the receipient of educational services.

Generalization may be most easily understood by contrasting it with recognition. Recognition is basically what is brought to a situation and generalization is basically how it can be applied. Generalization enables the performer to manipulate the parts of an event, i.e. course milieu, and create new patterns.

Differentiation is the process of breaking down and taking apart. It is the fact finding process. Emphasis on this concept teaches the student to search for the bits and pieces of the big picture.

Association is the capability of identifying the patterns and relationships that exists among the parts as they are manipulated by generalization. As applied specifically to higher education, association is the process of pulling the basic facts of a lesson together into some meaningful whole.

These T factors function dynamically in the infant and very young child. With aging, however, these processes appear to become stereotyped around a narrow range of behaviors which is influenced largely by the individual's experiences within his various environments: physical, social and cultural. In effect, socio-cultural routines become substituted for the basic dynamic psychological processes. For instance, instead of searching for new associations, one only looks for the accepted associations. When old associations fail to work, the people perish. Thus, businesses fail, governments collapse, individuals fail to succeed in life, and famine decimates much of Africa.

The techniques for shattering the stereotyped rigidity of thought are: 1) generate mild stress by varying the scope, scale, context, frame of reference, etc., so that the individual's old associations do not work and/or the old recognitions, generalizations, and differentiations do not work. This then "forces" activation on a more fundamental level of the T design. This part of the process works on the unconscious level.

Next we follow stress with instruction in the thought processes necessary to re-establish equilibrium! This second component of the change technique trains the individual on the model and its application. This is a conscious level effort.

Auxiliary Heuristics

In addition to the T design, three more heuristics are required for effective decision making, problem solving and learning. These are labeled FRiLs, R.Q.T.S.S., and A.E.E.F.

FRiLs is an acronym for Freedom (options), Risks and Limits. Throughout the training, students are taught to consider the constraints or limits imposed by a problem, the options open to them within those constraints, and to be aware of the fact that when these are violated they are not solving the problem or making a valid decision. Further, the students learn to identify those situations where limits, options, and the data given or logically inferred do not appear to preclude a direction, yet fail to provide for it. Such a direction is a risk and risks are not to be taken lightly, but only after a calculated consideration of all factors.

The effect is to make students highly conscious of the need to identify the FRiLs components.

The second auxiliary heuristic is the R.Q.T.S.S.: Reflection, Question, Test, Self-Correct, and Self-Control. Students are trained to systematically apply these various processes as they engage in learning and problem solving activities. They are taught, for instance, that reflection is the process of going over information in the mind using verbal rehearsal, verbal reconstruction, visual images, motor actions, sketching, etc., to *look again* at the information given.

Training in *questioning* requires the students to ask questions of themselves about the concepts they are studying. Different types of questions are discussed in training and an effort is made to establish a questioning *attitude*.

Testing, on the other hand, requires the student to apply an idea, decision, or solution to see if it works in reality or if it works within the hypothetical context being employed. The testing process identifies mistakes and misconceptions.

Self-correction is the process of autonomously taking corrective action when one has identified a mistake or misconception in his thinking.

Probably one of the more important notions in this auxiliary is that of self-control. This characteristic can not be fully achieved until the student has mastered all the concepts in the *T* design, FRiLs, R.Q.T.S.S., and A.E.E.F., for it is these various abilities that provide the capacity for self-control. However, it is very important to establish an attitude and value for self-control that precedes its achievement. For without this attitude, it is not likely to be achieved.

The initials A.E.E.F. stand for action, effort, effect, and feedback. Action implies action upon some stimulus, or class material. Effort refers to the energy expended on the task. Effect is the result achieved. Feedback is the new information acquired and incorporated into the learners physical and mental processes. It is obvious that the teacher is the key to successful application of this complex.

Now, if the errors of communication in teaching are so great and consequential as the errors of Reichenbach's philosophers, as I have assumed, should we not change? And are the above heuristics of value to the teacher/learner processes in higher education? Of course, we must make changes in our approaches to teaching in the university and throughout all higher education.

In pursuit of this line of reasoning we have developed and tested a very demanding hypothesis which we believe is supported by our research results.

IV. THE HYPOTHESIS

Effective implementation of the T design and attendant heuristics in the college classroom will yield significant results in content learning, decision making and problem solving.

V. METHODOLOGY

How can we test this hypothesis? We have tested this model in several different situations with a variety of students. In this instance, we tested the effectiveness of the model in a college content course over a period of one quarter. The students in this course were college freshmen. The sample was completed by thirty-two students. The instructor utilized the metamodel in planning course design, presentations and discussions. The instructor also demonstrated the model for the class using verbal explanation and chalkboard illustrations.

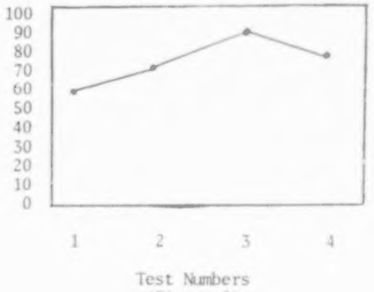
The effectiveness of the model was measured by the variation in scores over four successive course content tests. The mean for the first test was taken as the baseline. Metamodel utilization and explanation began after the administration of the first test. It was assumed that the students would approach the first test in the same manner to which they had adapted in high school. The means on subsequent tests were compared with the baseline to determine if utilization of the

the model would lead to significant gains as hypothesized.

The metamodel guided the structuring of the presentations to include: 1) differentiation of concepts, 2) developing patterns of meaningful information from the differentiated components, 3) using questions to stimulate the students to articulate and apply the patterns, and 4) encouraging the students to make use of the meta processes during their own study.

VI. RESULTS

The tests were scored, recorded, and the means were graphed to reveal any trend which might develop as the students were trained to use the T design (figure 2). The means are consecutively 59.9, 66.4, 83.4, and 72.5.



(Figure 2)

It is obvious from the graph that all scores subsequent to test one were higher.

Using the t test to compare the means of the trial test numbers 2, 3, and 4, with the baseline mean of test 1, we found that results on test 2 did not vary significantly from test 1. However, for test 3, we did find a significant difference with $p < .005$ and for the comparison of test 4 with the baseline, we found $p < .05$.

Thus, it appears reasonable to assume that the quality of teaching/learning was enhanced significantly.

The decline in the test 4 mean was explained by the students as anxiousness to continue high level performance, end of quarter "let down" and holdiay excitement.

These oversights on my part have, nevertheless, led to instructive insights which will enable me to further refine the model.

VII. GENERALIZATION OF THE MODEL

1. Organization and presentation of course material is more efficient and more effective.
2. The teacher feels better about himself/herself and about his/her professional performance.
3. The teacher sees and understands the problems that students have in learning and is able to help them.
4. The students get more from the class and feel better about the course, the teacher, and themselves.
5. The model generalizes to virtually any classroom situation.

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CULTURE AND PEER-GROUP LEARNING: AN ACTION RESEARCH PROJECT WITH CHINESE SOCIAL WORK STUDENTS*

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The Presenting Problem

One of the difficulties facing a teacher of social science, more particularly in a profession such as social work, is the gap between theory and its application to practice. The difficulty is increased where cultural factors are themselves obstacles to the utilization of theoretical concepts. Concepts may be seen as specifically western with little universal relevance.

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The problem is felt in many Asian universities and departments since higher education in the form we are now familiar with is to some extent an import. Put another way, in all but the most xenophobic of places academic institutions borrow ideas, institutional forms, and policies from other places. This has a very positive aspect but the difficulties associated with borrowing should be obvious too.

In social work education, when theories are literally translated and no transformation of ideas takes place, there is a tendency for students to learn them for examination purposes only, without applying the idea in practice or even exploring whether the concepts could be utilized in the field.

Theoretically, there are a number of strategies which might be used to meet the deficiency, if such it is. (Muhammadi, 1977; Chatterjee & Ireyes, 1981) One approach is to attempt a transfer and modification of social technology by intervening in the learning phase so that the training itself becomes the context and means of transferal. (Harvey, 1979; Goldin & Perry, 1980; Collier, 1980) This approach was the one chosen in the present research.

The Project

Very simply, the methodology of the research was as follows: A facilitating team of instructors coached 50 students in a limited body of theory — the dynamics of planned change according to the Lippitt school. The tutoring was done through small group teaching with almost no written material. The students studied the model of planned change presented to them, reformulating and modifying the ideas as they wished. In the second stage the students gathered together as a single class to negotiate a unified theory of planned change, i.e., their interpretation of the original theory -- adding, subtracting or totally altering the ideas according to their opinion of what was appropriate. When they arrived at a consensus among themselves (which took time), a team of rapporteurs recorded their ideas. The rapporteurs wrote up the theory presented in a systematic fashion and submitted this to the class for double-checking and editing.

The next part of the experiment consisted of the students designing a skills training course using the theoretical concepts as they understood them as well as additional training material which the instructors made available. The entire class then sought to agree upon a general format for a workshop but failed to agree, and in the end each group decided for itself what form their particular workshop would take. The students, again breaking up into small groups, undertook their own workshops. The last part of the project was an evaluation of the experiment by the students themselves and an assessment of how the original theory was utilized, changed or rejected.

The theory presented was that elaborated by Ronald Lippitt and associates on the dynamics of planned change. (Lippitt, 1976, 1982) The choice of theory stemmed in part from its relevance to social work. Secondly, since Lippitt has elaborated his concepts in various books, seminars and training workshops over the years, the concepts form a consistent, middle-range theory, with demonstrated applicability to practice. The thrust of Lippitt's work has been to describe how to bring about change, and his research and training courses have focused on the development of necessary skills. The specific material used in this demonstration project was Lippett et al., Resourcebook for Planned Change.

The class, selected for the project, consisted of 50 third-year undergraduate social work students, divided into 9 groups. Although there was probably some peer pressure to stay with the experiment, groups were free to drop out and in fact two did. The instructors, trained and briefed beforehand, studied the Lippitt material in English but usually spoke Cantonese with students.

The knowledge, skills and values of planned change had two distinct focal points throughout the course: the task and the process. The instructors were trained to be relatively non-directive and to put a strong emphasis on process, although they did not always find this easy.

The project extended over two terms of approximately 14 weeks each with 90-minute weekly sessions. There was a break for Christmas and of course the Chinese New Year. The aims of the course were explained to the students in advance.

Data Collection and Methods of Analysis

The three chief methods of data collection and analysis were participant observation of the students' behaviour, content analysis of the rapporteurs' reports, and student evaluations of the experiment. To the extent that the interest of the researcher is in preserving the classroom setting and the normal environment in which teaching occurs, participant observation is appropriate. (Lippitt, 1981) But to the extent that the researcher cannot articulate in detail the precise manner of observation, it is difficult to move from the presentation of observational data to it validity.

It is also possible to question this study on the grounds of its assumptions. One may query the assumption, for instance, that Chinese students fail to utilize western social science theory more frequently than, say, American students. The assumption is untested scientifically and the present study was in no sense comparative. Lastly, a case study does not provide a basis for a definitive evaluation of a teaching method.

That said, a case study such as this has the weight of common sense on its side. Failure to utilize western social science theory is a phenonomen fairly widely observed by those who teach non-English speaking Asian students -- students not speaking English as their first language, that is — at least in the field of social work. As a method, participant observation can define reality from the observer's standpoint, and it can capture the philosophy and outlook of the participants rather well. Finally, while the findings of one case study cannot be generalized across the board, they have relevance to similar circumstances. However, if one single justification of the study were needed, it could be stated thus: a teacher cannot take for granted that students from one culture automatically understand or experience no difficulty in utilizing theories coming out of a foreign environment. Teachers should experiment with ways of transferring social technology, even if the experiments are not wholly successful.

Conclusion

It is not possible in a paper of this length to presents the results of the research project in anything but the most summary form. The results of the experiment were mixed. After a slow beginning and a constant resistance to the teaching method, the students modified the original theory presented to them. They drew up their own theoretical model with somewhat different assumptions and alternatives for change. The planned change model of the Lippitt school was not rejected so much as altered. However, in altering the planned change theory the students did not launch any "indigenous" Chinese model but fell back instead on bits and pieces of previously learned theory. The result was an eclectic model of planned change, constructed from mainly western theories though based in part on what the students felt was appropriate in a Hong Kong setting.

Having fixed on their own change theory, the students went on to plan and carry out group workshops. These they designed, each in a different way, to teach themselves the skills which they felt were necessary for planned change.

Perhaps the most striking aspect of the experiment was the students' resistence to peer-group non-directive teaching. While this attitude was not universal in the groups, it was widespread and deep. There are a number of possible explanations for this. (Lewis, 1979) Students go to the university to acquire knowledge. So long as the students see this acquisition process as a simple transfer of information from the teacher to the taught they may tend to regard group criticism of a reputable conceptual system as a waste of time, if nothing worse. (Jones, 1979) And it has to be remembered that in Asia students have good reason for not wasting time.

Even the expression of opinion cannot be taken for granted since it is not universally accepted that students can have opinions of any importance. (Hayden, 1976) There is a tendency for students, and sometimes teachers, to see divergence as a social evil and to regard unanimity as a supreme good. In Hong Kong, students often stress the importance of compromise in their approach to a problem. This can short-circuit discussion. In the present research project, the students worked very quickly to come up with a single agreed-upon theory of social change. But even that took time, which students resented. Most felt that the same results could have been achieved without the necessity of protracted discussion and negotiation.

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USE OF TRAINING METHODS IN UNDERGRADUATE TEACHING

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Having undergone training in the North American educational system, the author finds his job as a university teacher in Hong Kong a real challenge. In a culture where emphasis is on discipline and reverence and where students go through various forms of tests, examinations as well as screening before they are admitted to one of the two universities in the territory, the task of changing the students' learning habit is absolutely formidable. In order to help students to survive the local competitions on their way to higher learning, the educational system at the secondary level and down tends to buttress an attitude which leans heavily to the P side of the P-Q formula. What it means is that teachers are inclined to emphasize on the passing of knowledge rather than to encourage questions from their audience. Consequently, students are doing well in memory and are getting used to being led by the hands.

This is exactly the mentality which makes university teaching difficult. To the extent that management at the university level is treated as a scientific discipline, management teachers may end up finding that on the one hand students have been taught and have hence accepted that "the prince and the princess are married and are living together happily thereafter" and on the other hand the solution of many a management problem calls for a contingency approach. Similar difficulties exist in the teaching of cognitive skills which is so much an integral part of university education. Among the six types of

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behavior which are included in this domain,[1] analysis and synthesis pose the biggest challenge. After all, how can we expect those who are so used to parroting what they read and hear to "build a structure or pattern from elements found in diverse sources"(SYNTHESIZE) or to "break down systems or communications into components"(ANALYSE)?[2] If learning is being viewed as habit formation, rote memorization and adequate drill are likely the means to the end. When problem solving behavior is the target, however, we may have to focus on organized relationships and meanings because "a solution achieved with insight can be applied in new situations".[3]

Against this background and experience, the author has adopted two different modes of instruction during the past few years when teaching the Principles of Management course which, incidentally, was a first year course. During the initial stage of this period, a typical textbook approach was used. In essence, the author simply introduced the course materials in a strictly pedantic manner. In the final examination, the way the students answered the questions clearly indicated their one-track thinking. Although some of them apparently had done some extra reading, the general pattern showed that they believed they had a definite solution on hand. To the majority of them, to repeat what the textbook said was the best they could do when answering the examination questions.

Having set this baseline, the author began to use an entirely different approach with the new classes. For instance, during the first week of the term, efforts were made to demonstrate that many principles and theories in management could not be accepted without qualification. Instead of accepting such statements at face value, the students were reminded to examine them within the advantage-disadvantage context. We all knew we benefited from mass production which had its root in division of labor. But division of labor was by no means perfect. It indeed created motivational problems in an organizational setting. However, the concept was still adopted because its advantages apparently outweighed its disadvantages ...,so went the discussion.

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[1] Dugan Laird, Approaches to Training and Development (Massachusetts : Addison-Wesley Publishing Company, 1984), pp. 107-108.

[2] Ibid., p. 108.

[3] Ernest R. Hilgard and Richard C. Atkinson, Introduction to Psychology (4th ed.; New York : Harcourt, Brace & World, Inc.,1967), p. 303.

It was also pointed out to the students that although some phenomena appeared to be conflicting with each other, they were in fact perfectly campatible when put in perspective. Students' attention was drawn to two proverbs : "Absence makes the heart grow fonder" and "Out of sight, out of mind". After the students had agreed that each of these proverbs could stand in its own right and that the two statements did appear to be at odd with each other, they were encouraged to come up with observations which would accommodate both phenomena. The students were puzzled by such invitation to think. When it appeared that their newly gained autonomy did not lead them anywhere, the author suggested that the introduction of a new variable might do the trick. As soon as the element of time was mentioned, it dawned on the students that the relationship could be conceptualized as in Fig. 1. It appeared that people's feeling would run high when they first parted. Assuming no efforts were made to maintain the relationship, affection for each other would fade as time went by. The students were impressed by the way the seemingly incompatible phenomena were dealt with and, as far as

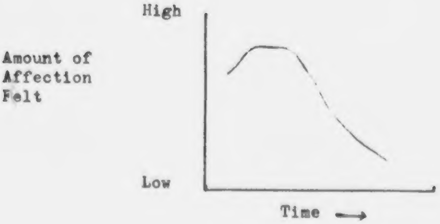

Fig. 1 How Affection Changes in the Course of Time

the author was concerned, the stage had been set for a new way of teaching.

When it came to the topic of planning, the author again decided to do things differently. Instead of immediately teaching students the basic steps in planning, the author asked them to "warm up" with a case study (see Appendix).

Simply put, the case was about automakers who were affected by a shortage of tires due to the strike in the rubber industry. Consequently, they had to make do with their existing stock and began to produce motor vehicles without spare tires. When the strike was over, the tire manufacturers were so tied up with both backlog and new orders that there was little incentive for them to make additional spares. On top of that, the distribution network of tires and line of responsibility were not at all clear. As a result, the consumers were either still waiting for their spare tires or getting tires of the wrong size or type. Some of their complaints eventually found their way to the Federal Trade Commission. Six case questions were suggested to facilitate discussion(see Appendix).

Students were first asked to work on the questions individually and then participate in group discussion. To Question 6 which reads "Construct an alternative plan for marketing 'spare-less' vehicles", the most typical answers were as follow :

-Convince the customers that spare tires are not immediately necessary because the cars are new.
-Convince the customers that the quality of the four tires fitted to each car is so good that the possibility of a puncture is really remote.
-Assure the customers that, in case of puncture, they can call an authorized depot for immediate supply of spare tires.

In passing, it is interesting to point out that so far students in four different classes have made suggestions similar to these ones.

After the students had recorded their answers on the board, they were asked on what ASSUMPTIONS they made their suggestions. Immediately they began to realize the relationship between the validity of their assumptions and the quality of their suggestions. They came to understand that their recommendations might not work because they rested, as it were, on shaky foundations. As an example, they realized that the quality and/or the condition of the tire had very little to do with whether or not they would be getting a puncture because the latter might not be the natural result of wear and tear. Furthermore, the third suggestion would work better in a place like Hong Kong which is small by geographic standards. It would be unrealistic to operate such a system in countries like the United States where cars might stall in a highway hundreds of miles from the nearest depot. Last but not least, they also questioned whether they were dealing with a closed or an open system. In an open system, people should be able to import tires from elsewhere (e.g. Japan) to alleviate the supply problem.

The use of a case study in this case was in line with the principles of adult learning which, among other things, stressed the importance of actively involving the learners in the learning process. To evaluate the effectiveness of such arrangements, subsequent responses and performance of students were examined within Kirkpatrick's 4-step framework. The steps are defined as follow :[4]

Step 1 : Reaction.	How well did the conferees like the program ?
Step 2 : Learning.	What principles, facts, and techniques were learned ?
Step 3 : Behavior.	What changes in job behavior resulted from the program ?
Step 4 : Results.	What were the tangible results of the program in terms of reduced cost, improved quality, improved quantity, etc.?

As far as reaction was concerned, the participative method was undoubtedly better received by the students, witnessed their outspokenness, excitement as well as satisfaction when the experience of insight suddenly came. With regard to the other criteria, the performance and improvement of the students were mainly evaluated in the way they answered questions such as "What do you understand by MBO ? What would you do to make it a successful exercise ?" in the final examination. A comparison of the typical answers by students coming from the two different modes of learning is in order :

TRADITIONAL MODE	PARTICIPATIVE MODE
-Define MBO	-Define MBO
-Describe the process of MBO	-Describe the theoretical basis of MBO (e.g. Theory Y)
-Emphasize the details of the MBO process	-Describe the process of MBO
	-Discuss the conditions

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[4] Donald L. Kirkpatrick, "Evaluation of Training," in Training and Development Handbook, ed. by Robert L. Craig and Lester R. Bittel (New York : McGraw Hill, 1967), p. 18-2.

PARTICIPATIVE MODE

which are critical to
each step of the process

It can be seen from the comparison that students who had undergone the participative mode were more prepared to examine the underlying factors in addition to the explicit elements. They would, for example, question the readiness of the subordinate to take responsibility rather than simply pointing out that the superior and the subordinate should sit together and hammer out the mutual objectives. From the conceptual poiht of view, their appreciation of the situational variables was certainly more impressive.

To close, the author is well aware that, instead of rounding up his discussion in a conclusive note, he may have opened up a new area of inquiry. For example, can training methods be used in the teaching of social science subjects ? If yes, are there limitations which we have to live with ?

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CASE STUDY: A PROBLEM OF TIRES

Because of the strike in the rubber industry in the summer of 1976, about 2.5 million cars and trucks were produced without spare tires. Automakers had to make do with existing supplies, and by producing motor vehicles without spare tires, they were able to stretch their inventories by 20 percent and produce more cars. It was important for automakers to continue to produce as many cars as they could, since the auto industry was just beginning to recover from a prolonged sales slump.

When the strike was over, the automakers presented the tire manufacturers with a list of vehicles that had been produced without a spare. The tire manufacturers were supposed to ship extra tires to the appropriate auto and truck dealers, who would in turn get the spares to those customers who did not have them. Automakers were unable to handle the tire distribution themselves. As one spokesman for an auto manufacturer was quoted as saying, "We didn't have a distribution system. We aren't in the business of shipping spares."

Unfortunately, the tire manufacturers were not in position to ship spare tires immediately. They were under pressure to fill a backlog of orders as well as new tire orders for cars that were now being produced. Making additional spares did not have top priority. In addition, the tire companies were not properly prepared to ship tires directly to car and truck dealers.

By late March 1977, when the strike had been over for six months, it was estimated that about 200,000 people had still not received spare tires. Moreover, many people who received spares found that the tires were of the wrong size or type. Customer resentment was high - not only were customers bothered by the long and highly inconvenient wait for the spares, but they also deeply resented paying full price for their vehicles when they were sold to them with one tire missing. In addition, the Federal Trade Commission was investigating reports that some buyers were not told their vehicles were without a spare. (Reported in the *Wall Street Journal*, March 21, 1977.)

Case Questions

1. What was wrong with the automakers' plan?
2. How did the divided responsibility for getting spare tires to customers dilute the effectiveness of the plan?
3. How could dealers have offset some of the problems created by the automakers' plan?
4. How would you have coordinated the activities of automakers, the manufacturers, and dealers in getting spare tires to consumers?
5. Why do you think the automakers did not try harder to get spare tires to their customers?
6. Construct an alternative plan for marketing "spare-less" vehicles.

Source: James A.F. Stoner, "Management" (New Jersey: Prentice-Hall, Inc., 1978).

INTEGRATING COMMUNITY AGENCIES INTO UNDERGRADUATE EDUCATION: A COMPARISON OF TWO APPROACHES

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Brown University

Although a Maginot Line seems traditionally to divide town and gown, in fact undergraduate education can gain by crossing the imaginary divide. For students in the social sciences particularly, contact with community agencies can enhance the student's understanding of the workings of a bureaucracy, of specific social problems, of interrelationships among organizations, of client-provider status differences, and of the mechanisms for setting priorities. A student analyzing child abuse after weeks spent in library research, for example, might benefit from a stint as a Hot Line telephone operator.

The Department of Family Medicine at Brown recognized the advantages of introducing students to the workings of diverse community agencies. Specifically, the Department wanted premed students:

1) to learn about families from a vantage outside the medical "physician-dominated" model. Many agencies work with families, and their view of family dynamics differs from that of physicians.
2) to understand how the agencies themselves work. Community social agencies represent potential colleagues for the family practitioner. It was hoped that letting premed students see first-hand the workings of an agency would

also give students an appreciation for the very concrete niche these agencies fill in the care of families.

To accomplish these ends, the Department used two different approaches: a course approach and an internship one. This paper reports on the relative advantages and disadvantages of each. Integrating community experiences into undergraduate education enriches the academic experience, but faculty devising formats should recognize pitfalls.

Course

In 1981-82 and 1982-83 the Department offered a course to Brown undergraduates who were tentatively considering medical school. The course had two parts. In standard weekly academic seminars, supervised by a faculty sociologist, students met to discuss theoretical and applied readings from a prepared syllabus. All students read the same material, which focused on family dynamics and specific family problems. At the same time, each student was assigned to a different community agency that worked with families. Each student was expected to spend one-half day a week at the agency, learning how it worked, what it did, and participating to an admittedly limited extent in its operations. Some examples of participating agencies included: the Lead Paint Screening Program of the state Health Department, the Pregnant Adolescent Program of Catholic Social Services, the Multiple Sclerosis Society, a group home for retarded adults, and a primary school for Indochinese refugee women. At the end of the semester each student wrote a paper that discussed his or her agency experience in light of concepts presented in class.

Advantages

1. A Support Group

Students could share their experiences with their peers. If a student encountered a dilemma, a troubling event, or a problem, he could share his dismay with colleagues. Similarly, if a student was enjoying the experience, he could share that enjoyment. Many students found their foray into the community emotional, as well as intellectual, experiences. The weekly seminars gathered students for formal and informal sharing.

2. An Academic Component

While "experiential" learning may offer students valuable insights, it does not necessarily offer an intellectually challenging experience. In an academic component students were expected to grasp a series of theoretical concepts about families. At the end of the semester each student wrote a paper that related those theoretical concepts to his/her experiences with the agency.

Some students will have less than satisfactory community involvements than others. Agencies' structure, the motivation of supervisory personnel, the nature of the agency's task - all influence the student's experience. Some students may not learn much from their field assignment. An academic component at least guarantees that those students will not have wasted the semester.

3. Collegial Learning

Each student was expected to deliver a brief talk to classmates on the agency he or she worked with, what it did, its relationship with clients, its linkages to other agencies, and the particular tasks the student observed or performed. These talks gave students the opportunity to learn about other agencies. Often students dealt with similar constituencies and clients, but from different perspectives.

Disadvantages

1. Limited Agency Involvement

With only half-day a week, students did not become part of the agency, but remained tangential. Although many students moved from observers to participants during the semester, the limited agency contact made a strong commitment difficult. Students did get to "know" their agencies, but often the knowledge was superficial.

2. Little Agency Benefit

Although many agencies eagerly participated in the program because they strongly wanted prospective physicians to understand and appreciate their role, in the short run these agencies spent time and effort to enhance students' experience, but received no concrete benefits. The student placed with an agency did not truly help staff. Instead, staff spent time sharing their job experiences, introducing the student to clients, orienting the student to the agency. Each agency received a copy of the student's final paper, and some staff doubtless enjoyed contact with students. Nevertheless, at a time of dwindling financial support for community agencies, the Department was grateful for agencies' cooperation.

The course offered students exposure to community agencies, but an exposure grounded in academia. Formal regular seminars, a syllabus, scheduled oral presentations - all strictly delineated the community experience as one part of a normal course, designed to complement the academic component.

In 1983-84 and 194-85, reappraising the course, the Department decided to address the initial goals of orienting premedical students to community agencies, not through a formal academic course that included a field component, but instead through "internships" in community agencies.

Internship

A Department faculty sociologist recruited agencies willing to sponsor a student intern. The student would spend 10-12 hours a week at the agency, where he would concentrate on one specific project. Ideally, the student would be responsible for one phase of a larger project; e.g., developing and pilot-testing a survey for home-bound elderly; counseling pregnant adolescents at a group home; evaluating refugee children's progress in a local elementary school. At the outset the student would know what the agency expected, so that the student could choose an agency guided by that knowledge. Throughout the semester the student would keep a journal of observations and impressions. Periodically the Department sociologist would review the journal, meet with the student, and recommend appropriate readings. For the final paper the student would analyze his particular project, setting the project in a larger context and reviewing the agency's approach. A student would receive full course credit for the internship.

Advantages

1. Student's Understanding of Agency

The student could gain in-depth knowledge of the agency by working on a project. Students found the "hands-on" experience exciting and valuable.

2. Student's Knowledge of Problem

The student could study one issue in-depth, such as adolescent pregnancy. Recommended readings complemented the field experience. In the course all students were assigned the same syllabus. Consequently, while students were exposed to a range of research topics, they could not analyze one topic thoroughly.

3. Agency Benefit

The agency gained a student eager to work on one project. Agencies with tight budgets welcomed the possibility of an additional part-time worker.

Disadvantages

1. Student Isolation

Many students chose an "internship" in part to enjoy a respite from campus life. Although some student may not feel isolated working within the community, other students might miss the camaraderie and support of fellow students, especially if the student encounters difficulties at the agency.

2. No Separate Academic Component

An agency may be undergoing personnel shifts, may be redrafting programs, may suffer from employee infighting; and the student may feel that after a semester he has learned and accomplished little. The Department has no direct control over the student's experiences at the agency. Presumably, agencies that submitted a proposed project for an undergraduate intership believed that the experience would be mutually satisfactory; but if the experience fails to meet student expectations, the student has wasted a semester credit which he might more profitably have used to take a different internship or a course.

3. Narrow Exposure to Social Service Field

A student learned to view a problem from the perspective of the agency. The initial goal of the Department was to help students appreciate the importance of nonmedical agencies that work with families. The internship enabled a student to appreciate one agency, but not necessarily any others.

In conclusion, a course offered broad exposure to the network of community agencies, student support and sharing, and a separate academic component that insured students a useful semester, even if the agency involvement failed to meet expectations. Internships, on the other hand, offered intense involvement in one agency as a student accomplished a specific project. Internships forfeited the advantages of the course. In designing curricula that will integrate the community into formal academic offerings, a Department must weigh both the advantages and the disadvantages of the two kinds of approaches. Advanced students might profit more from an internship experience, while students with minimal academic or practical background might benefit from a course. Similarly, if several students are working with agencies that share the same constituency, a course designed around those agencies' concerns might be useful. The community represents a potential asset for student education. Educators face the challenge of developing ways to integrate the community into the university.

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III

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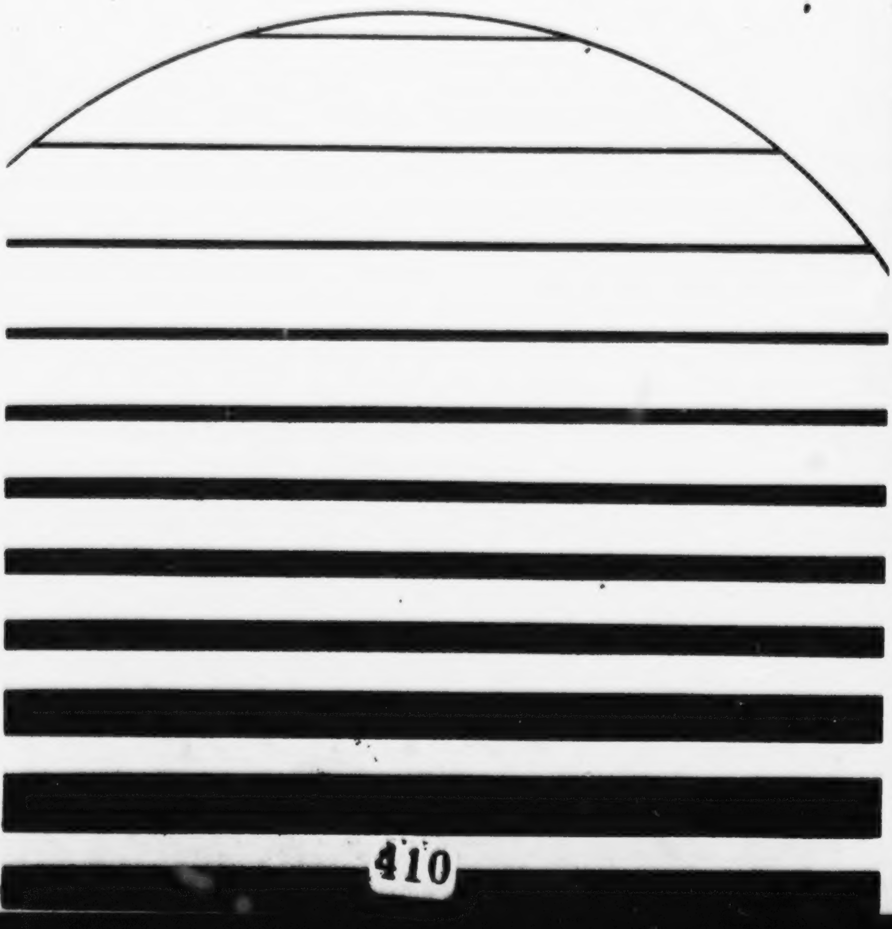

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FACULTY MOTIVATION AND PERSONNEL POLICIES

WEDNESDAY, 3 JULY

1530 - 1700

MOTIVATING FACULTY THROUGH EVALUATION:
IS IT POSSIBLE?

Larry A. Braskamp
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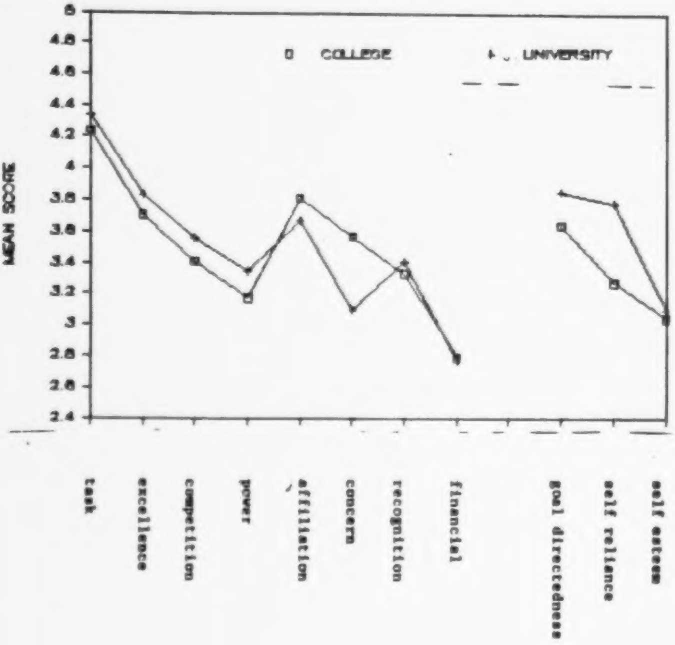
Introduction

One of the major issues facing higher education for the rest of this century is the continuing motivation of faculty. With an aging faculty, a stable but no growth industry, increased cries for more accountability and productivity and increasing imbalances in salaries of faculty in American universities and colleges, what can we expect regarding the continuing motivation of faculty? Is there an inevitable clash between institutions requiring more organizationally oriented behavior and faculty whose image is that they gain rewards and meaning from their own individual achievements? What has been and what can be the role of evaluation in promoting faculty motivation and productivity from both the perspective of the faculty members and the institution?

Using data we collected from five institutions of higher education in the U.S., I will first summarize the motivational patterns of faculty. Second, I will review our research on the ways in which faculty currently view evaluation in their professional careers. Third, I will draw some conclusions and implications about how evaluation may be able to assist both the institution and the professors in maximizing productivity and satisfaction.

The Validity of the Image of Faculty: The common image of faculty is that they are individualistic, work on projects that are intrinsically interesting and challenging, and are not apt to value cooperative team work and develop strong bonds to the institution where they work. The university or college as an institution is often portrayed as the sum of the individual faculty, and thus cooperative goals are not as frequently pursued as individualistic ones.

Our research on the career development of faculty and their motivational orientations does not completely support this singular image of the faculty. Martin Maehr and I (1984) have examined eight personal incentives and three self concepts of nearly 200 faculty at five small liberal arts colleges (four of which were church related) and over 50 faculty at a large research university. The eight incentives we studied represent values that adults find important and meaningful to them. (Within our theory of personal investment we argue that persons invest their time, resources and energy into different activities depending upon the meaning they can receive by engaging in these activities.) As shown in the graph the profiles of these two groups of faculty place differential importance on these personal incentives. Faculty in general value highly what they do, but university professors match closer the stereotype described above than do professors at small colleges. University professors are more task oriented and place more importance on striving for excellence in their work. They are also more competitive and interested in power and influence over others but have considerably less interest in affiliating and working with others. Relative to university faculty, college faculty are more apt to regard their work as a way to express their concern for others often at the expense of their own personal gain. Furthermore, university faculty are more goal directed, and are considerably more self reliant than college faculty. In short, faculty do express high instrinsic motivation but also have different motivational patterns, including altruistic values.



Motivational orientations of faculty also vary at different professorial ranks (assistant, associate, professor) according to our research (Braskamp, Fowler & Ory, 1984). Sixty faculty at a large research oriented university were interviewed about their aspirations, sources of pride and satisfaction and institutional expectations. The faculty expressed different goals and values about their careers as they progressed through the ranks. Younger assistant professors had more narrow short term individualistic achievement goals and work habits than did older faculty. Faculty in the middle years became less financially oriented, turned more of their attention to helping others, but also were more interested in a variety of types of achievement. In general, faculty became more dissimilar at each rank. Full professors' careers encompassed writing, consulting, entrepreneural endeavors, advising, teaching, and increased involvement in administration.

In sum, the individualism and self sufficiency of faculty are generally strong but this does not fully describe all faculty. Two factors need to be considered when discussing the personal characteristics of faculty -- career stage and type of institution in which a faculty member pursues a career.

Evaluation of Faculty: Evaluation of faculty have taken many forms and has increased in use in American universities over the past two decades (Seldin, 1983). Evaluation can be interpreted as feedback. It includes reviews by others but also personally collected informal information used by faculty for their own use, and information about performance that is a part of the work flow and performance itself (e.g., knowing that a computer program written did not work).

Using feedback as a possible source of changed behavior has been discussed by McKeachie (1976) who concluded from his research and others that feedback per se will not necessarily result in greater improvement of performance. Are there conditions under which a faculty member can be most motivated to improve? Can feedback strategies in academe be designed and implemented to enhance continuing motivation and increased performance both from the individual and the institutional perspective? Partial answers to these questions can be found by examining the focus of the information, the perceived consequences of the feedback, types of feedback, and method of communication of the feedback.

Focus of Information: The first condition involves the extent to which feedback is internal and intrinsic to the task itself. Feedback that is self generated or a part of the work flow (e.g., completing a computer program) is often more immediate, private, and has the important feature of ownership. Thus the user can perceive the feedback as his/her own. Because of this sense of ownership, the chances of accepting and acting on the information increases. Furthermore, intrinsic feedback from the performance itself influences future performance. A person can feel good about doing a job well and by doing it well can gain confidence in mastering more difficult and challenging tasks.

Faculty do receive information or feedback that is intrinsic to their performance. Faculty conducting research and experiments often use the results to validate their ideas, since it is a part of the self correcting nature of their work. Instructors use quizzes and classroom exams to provide information about their effectiveness as teachers. However, the nature of much of the work of a faculty member requires reliance on others' opinions about themselves such as student evaluations and peer reviews. Based on our interviews with 60 faculty of all ranks at a large university, feedback from others was not only used but sought after. Despite the relative frequency of planned individual meetings with the department head, professors at all ranks desired feedback about their work from others (Braskamp, Fowler & Ory, 1981). Furthermore, reliance on others was partially a function of time and status within the profession. Assistant professors desired more information and it carried considerable weight in their formative years. It became the basis of their professional self image. As professors gained experience they used feedback from others to check out rather than to form their internalized judgements.

Perceived Consequences of the Feedback. A second condition relates to the perceived use of the information. It can be a way for faculty to become more fully informed of their progress or a controlling mechanism in which faculty see the administration using it to achieve institutional goals. The former view is less threatening and more apt to facilitate the emergence and maintenance of greater intrinsic interest and motivation in the work itself. It also promotes self development. The controlling view, on the other hand, is perceived as a means of acquiring institutional accountability. It has an explicit contingency between performance and outcome (e.g., tenure, salary) built in the process.

In academic circles, both functions exist and are often blurred (Braskamp, Brandenburg & Ory, 1984). In fact they are ultimately inseparable. Based on our interviews, faculty most vividly remember those evaluations that have directly affected their careers. For example a conversation with a department head or dean is viewed both as an important influence on one's career but also as an indicator of how one is and will be treated at the institution. Faculty did not express that they often consciously and systematically engage in self monitoring practices, ie. voluntarily use feedback for informational purposes only. Instead, feedback is equated with the formal evaluations of their individual efforts and achievements. Staw (1983) views this dilemma from an organizational perspective, "Universities are an odd mixture of American and Japanese styles of organization. Nearly all universities offer lifetime employment through tenure, use an evaluation system that is often slow and subjective and encourage a merger between work and social life . . . Yet, cutting across these organizational features is a strong and often fierce emphasis on individual achievement. Tenure decisions are rarely based on cooperative efforts and joint projects but instead upon concrete individual achievements." (p. 313). Thus in American universities the perceived most important use is control. This perception has two major implications. First, the potential multiple uses of feedback are reduced. Second, the contingency between performance and rewards, which should be revealed in the evaluation process, is one that is most apparent when the performance is research productivity. The linkage between performance and rewards is more difficult to document and thus defend when faculty cooperative projects in teaching and service to the organization are evaluated.

Types of Feedback: Feedback has taken on many forms, including student ratings, committee reviews, student answers to a quiz, informal exhanges among colleagues, invited talks, awards, public recognition, salary and tenure. Based on our interviews, as faculty progress in rank and stature they use a variety of information and increase as well the diversity of methods to acquire feedback. In the early years, student evaluations and peer reviews of manuscripts are dominant. As their roles change, faculty often expand their definition of professional success which in turn influences how they decide to assess their achievements. For example full professors place considerably more importance on invited addresses and informal conversations and letter exchanges with recognized experts in the discipline than do faculty of other ranks.

Method of Communication: Finally, the method of communication of feedback differently influences subsequent behavior. Cohen, (1980) in reviewing the impact of different types of information faculty receive about their teaching, concluded that feedback within a consultative relationship results in greater improvement in subsequent teaching than feedback which includes only written information based on student ratings.

Conclusions

Based on the review of the research just presented are appropriate feedback strategies being utilized to achieve personal as well as institutional goals in colleges and universities? The answer is "it depends." Feedback in research productivity is perhaps most utilized because peer evaluations are the accepted norms and social comparisons are integral to this line of work. Feedback in teaching is often done more formally i.e., student ratings or peer reviews. Informal self monitoring on progress, obtaining advice from others on curricular matters and teaching style within an atmosphere of cooperation and mutual problem solving occur less frequently. Thus if feedback is to be an effective tool, we need to take into account some considerations in designing evaluations. First the type of person who is to receive the information is critical. Evaluation strategies in which individual achievements are only assessed so the appropriate reward can be attached -- be it salary increase or recognition -- perhaps work best for those who highly value the work itself, are competitive and have strong incentives to excel and be at the top of their profession. A strong linkage between individual performance and reward does not also lead to cooperative behavior or promote service activities. Since faculty vary in their incentives that reflect altruism, evaluation as a mechanism can be used to reward those who have a willingness to forego individualist endeavors to work for the welfare of the organization or more directly to serve others. The emphasis on individual accomplishments in evaluations may not be appropriate and helpful both to the faculty who are primarily teachers, and to the institution as McKeachie (1982) and Staw (1983) have argued.

Second, evaluations need to be examined in terms of how faculty perceive them. If faculty have autonomy to design their own feedback strategies they will be more apt to view feedback as a help rather than a controlling device. Thus, feedback is not to be construed as only a way for determining the contingency between performance and external rewards to be delivered by the institution. Instead feedback should occur more naturally, and frequently, and as an integral part of the work itself.

Third, the institutional perspective also needs to be taken into account. Feedback can be used as one form of socialization whereby faculty can learn of the institutional goals and expectations. Feedback can be used to promote and reward commitment and loyalty to an organization. Frequent informal discussions among peers and administrators in a mutually supportive way can be encouraged. It should be feasible, since faculty, especially those in the formative years of their careers, did desire more feedback.

Perhaps the over emphasis on individualism becomes a barrier to both the faculty member and the administrator. Without communication with the faculty, the institution loses opportunities to communicate its expectations and goals to the faculty. In the evaluation process, particularly the communication phase, the institution can stress and reward altruism and a sense of belongingness, an incentive that some faculty especially value.

In sum, feedback should not be treated as a separate entity, independently of organizational goals and the motivational patterns of the faculty. Feedback can serve the organization as much as the individual faculty member, and how it is structured and implemented can have profound influences on a faculty member as well as the institution.

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THE DILEMMA COLLEGES FACE ON PAY SCALES: A FREE MARKET SOLUTION

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A perceived structural problem in education is the apparent over-enrollment in "popular" subjects such as Business and Engineering and a corresponding under-enrollment in education, liberal arts, and the sciences. As a result of the shifting enrollment patterns, there is a shortage of classroom instructors in the Business and Engineering disciplines, and an oversupply of teachers in education, liberal arts, and the sciences. The literature abounds with studies and opinions of the cause of this structural anomoly [Prokasy, 1984]. Some administrators view the cause of the problem as the inequality of wages between teachers in the different functional disciplines within the university. This conclusion is not supported by economic theory and will only exacerbate the problem.

In the October 10, 1984 edition of the Chronicle of Higher Education, University of Liberal Arts and Sciences Dean, William F. Prokasy, makes a plea against differential salaries based on a perception of the needs of the university, rather than demand reflected by class enrollments. Class enrollments are, in turn, driven by several different factors. Among these factors are (1) academic program requirements, (2) student perception of the job market, (3) personal interest, (4) perception of the future value of the subject material to the student, (5) level of difficulty of the subject, and (6) peer group influences. This is not intended to be an exhaustive categorization of why students choose to enroll in particular courses, but it does include many of the reasons.

We question the statement made by Dean Prokasy that

> ". . . high salaries in business and engineering are a symptom of the havoc being wreaked on university campuses by salary scales that are driven by off-campus market pressures."

Our position is that academic institutions must realize that external market pressures do, in fact, impact on academe. In addition, external organizations and individuals provide the financial support for the university.

The university exists primarily to enable individuals to invest in their human capital to their benefit as well as to society's benefit. It is a basic premise that the educational system will transmit a culture and common body of knowledge to the next generation of students. There are many different ways and forms of transmitting the culture and knowledge. It is not our purpose, nor do we believe it germane, to argue for or against pedagogical styles or preference for particular didactics in this paper.

We believe in market based economic and educational delivery systems that lead to the efficient development of long-term human capital. The educational system must transmit to the student the ability to cope with a changing environment. This single issue is a significant source of conflict between the Business and Engineering faculties, and the faculties in the liberal arts and sciences. Business and Engineering are rapidly changing, developing, functional disciplines. A view that Business and Engineering are trade schools that teach the application of principles developed in other disciplines rather than teaching the ability to adapt to new developments and changes is false. One of the primary goals of business education is to instill the principles of cost-benefit analysis, given the decision making framework/style of the student. We would hope that other professional educators would take a similar view. Quite often the educational system does not fully reflect the cost-benefit analysis necessary to achieve the long-term goals of generation of human capital.

We wish to demonstrate that the laws of supply and demand operate even in academia. We further support the hypothesis that higher education must conform to these laws or face declining enrollments and increasing costs. Academia must not allow the needs of the faculty and administration to supercede the needs of students, who pay tuition; the public, that supports the University through legislative allocation of tax revenues; and the business community that provides both jobs and financial support.

An egalitarian approach to salaries and other resources that the university has under its control, would not be in accord with economic theory. In addition, it would create addition problems for the hard pressed areas of the arts and sciences. The business community, through its hiring practices reveals which disciplines it values most highly. These demands, not the demands of the academy, should determine the courses offered and are readily reflected through student demand for courses.

Administrative attempts to control the number of students entering programs that are in high demand are self-defeating and self-destructive. Simple economic analysis should indicate that if students cannot obtain the education they desire at one university, they will (1) go to another educational institution that does provide the desired program or (2) raise considerable commotion within both the university and within the environment within which the university operates to bring pressure on the administration to offer more appropriate programs. Legislators, alumni, parents, and students can be extremely critical and demanding when their needs, wants, and desires are not met (particularly when they are paying the bills).

Why are fewer students entering the arts and sciences and opting for business and engineering instead? We would posit that this is simply the perception of the student that the education they receive in the latter disciplines is "better." That is, with a business or engineering degree, graduates may be able to obtain employment at higher wage scales than with an arts and sciences degree. There is an inference in Maslow's terms, that students seeking careers in business and engineering have a higher probability of reaching the level of self-actualization quicker than those students who seek careers in the arts and sciences. There is significant evidence to support this contention. A review of salary and wage distributions for graduates generates evidence that should convince anyone that business and engineering graduates earn significantly higher salaries than other graduates.

Another factor influencing salaries is tuition generated. Universities can afford to pay higher salaries to business and engineering faculty because they teach more students each of whom pays tuition. Business and engineering faculty generate substantially more funds than they use. Not only do they teach more students but there are fewer faculty per student. After the excess growth in the 1960's universities have learned not to respond to demand immediately. The surpluses generated are used elsewhere in the university structure. In pragmatic terms, this means that the salaries of many liberal arts professors are currently subsidized by the higher demand programs. In addition, approximately one-half of the courses in a business curriculum are taken outside of the business school. Were it not for these high demand programs, salaries in the liberal arts would be lower than they are already. Moreover, fewer positions would be available. Ultimately, if business and engineering programs are constrained, revenues will be lost to the entire university.

The underlying economic relationships are illustrated in Figure 1. We have an existing market relationship between the supply [SS'] of professors in discipline A and the demand [DD'] for professors of discipline A. The intersection point [E] is the equilibrium point: that point at which the supply of teachers equals the demand for teachers. Also, at this point, the wage to be paid these teachers is determined in the marketplace [$e]. If we interfere with the market forces that determine this equilibrium point, we either create a surplus of teachers, Figure 2, or a shortage of teachers, Figure 3. The egalitarian proposed salary reallocation will cause additional shortages in high demand areas by lowering the wages for teachers of these disciplines (e.g. business and engineering) and create a larger surplus of instructor in low demand areas (e.g. liberal arts and sciences). Every intrusion into the marketplace is bound to disturb the market determined equilibrium condition. We find that the first response to intrusions is a movement along the curve. The supply (or demand) curves do not shift. We find that people entering the field are unaware of the true market conditions. As market information becomes available, i.e., in the case of increasing salaries in low paying disciplines, players find that more and more people are competing for fewer and fewer jobs, the supply curve will actually shift. We attract people into the professions, but there are fewer jobs for them because the demand for their services has remained constant (at best) or decreased because the price has risen.

Unfortunately, although these few who gain entry into the discipline benefit, the cost is high. Salary money is taken from the high demand areas and is allocated to the low demand areas. When this happens, as we are currently experiencing in business and engineering, salaries are below market levels, and a shortage of qualified teachers results. In the short-run, fewer people choose to enter these functional disciplines because extrinsic rewards are lower than they would be under normal market conditions. In the long-run, the curve shifts and fewer qualified people tend to enter these high demand fields. This, obviously, compounds the original problem of too few faculty and too high wages.

Regulation of the airlines through the support of artificial fare structures not based on demand resulted in the oversupply of services in certain geographic areas. Deregulation of the airlines brought about more efficient air travel services both in terms of quantity and quality to those who choose to pay for the services. Service to areas not capable of paying their own way have been discontinued.

Our contention would be that the university must accept changes within the system. We cannot, and must not try to, stop the evolution of public education. We cannot stop the influx of new technologies, new methodologies, and new problems. The university must, if it is to survive, welcome change and develop methods of helping students and faculty deal with these changes. Languages change, scientific methodology changes, art forms change, interpretations of history change, so, too, do academic institutions change. It is more fruitful to examine the reasons for the resistance to change. One cause for resistance is that change leads to additional work.

We do agree with one of Dean Prokasy's major points. We believe that many undergraduate courses could be taught by people not involved in graduate research. In many institutions, introductory courses already are being taught by apprentice teachers. During our graduate programs, we were involved in this activity. In the accounting program at Michigan State University, when we were graduate teaching assistants, it was possible for a student to go through the undergraduate accounting curriculum without having a tenure track teacher for any of the student's major field courses. Whether this should be the case is not the issue. The issue is that it is already being done at many major universities.

We believe that the application of the tenure system is one of the major contributors to stagnation in the academic community. It is our observation that research productivity declines for tenured faculty. Perhaps this is reflected in the fact that untenured faculty, particularly in the business schools, earn approximately 25% more than tenured faculty members. Tenure may mean security within the university, but it does not guarantee productivity, either in terms of academic or graduate research or of pedagogical development.

However, tenure itself is not in and of itself the problem. A tenured faculty member does not earn the right to stop being productive because of five or six years seniority. One should not earn increases in salary, position, or status solely because of seniority. We are all familiar with the senior faculty member who only appears on campus on payday and to teach one or two required courses with notes that are ten to fifteen years old.

We entered the academic world over ten years ago. Both of us had several years of business experience before choosing to reenter the academic community. We are well aware of the responsibilities of management and managerial decision making for profit and not-for-profit enterprises. We believe that the costs of adapting the educational philosophy of Dean Prokasy are too high to be implemented. The allocation of our very scarce educational dollars in ways inconsistent with free market philosophy is both intellectually and economically incorrect. Our goal is to allow the free market to determine the programs in the university that will survive and not tradition or administrative fiat. Only then will the university remain a vibrant and viable contributor to the human capital of our society.

FIGURE #1

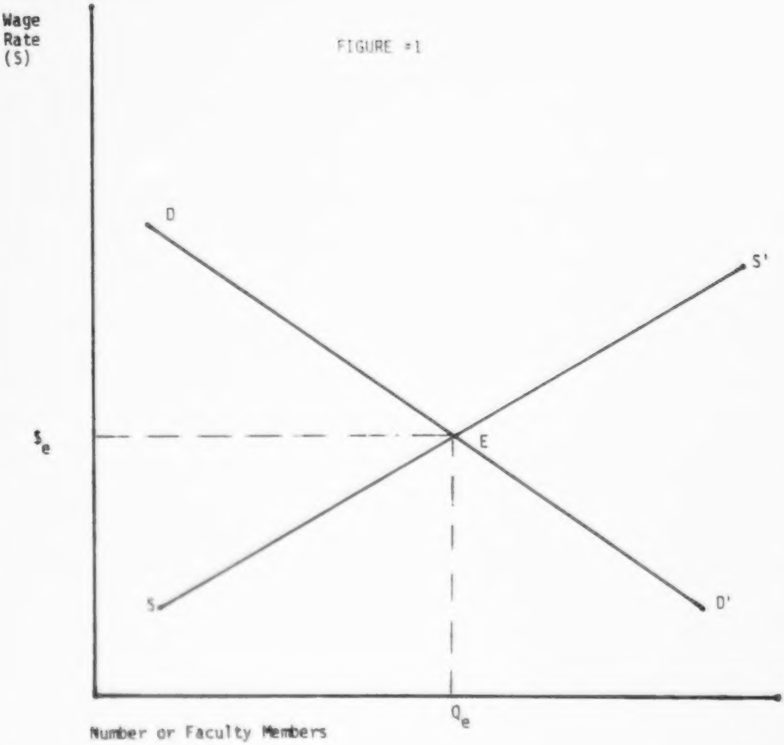
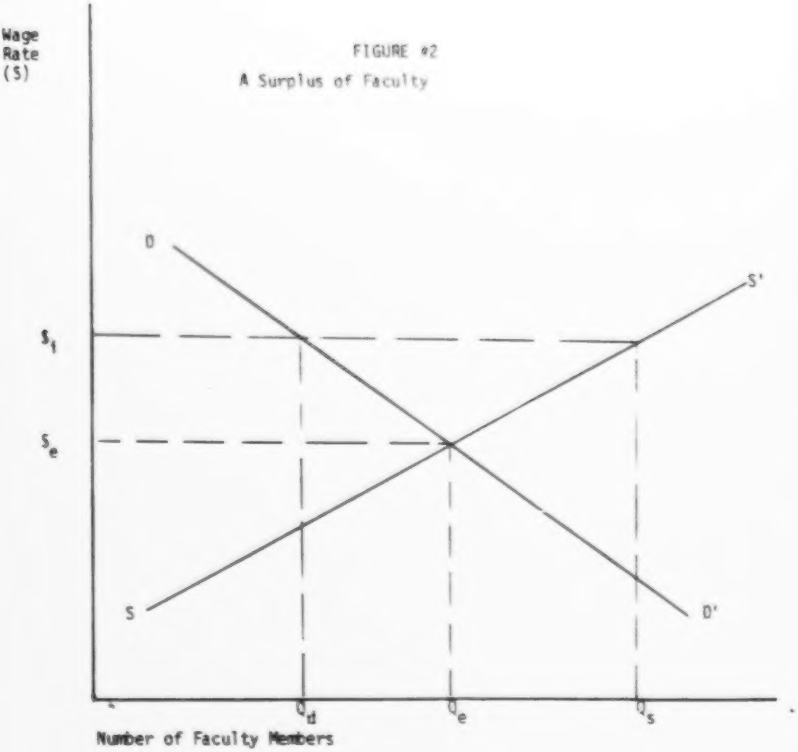


FIGURE #2

A Surplus of Faculty



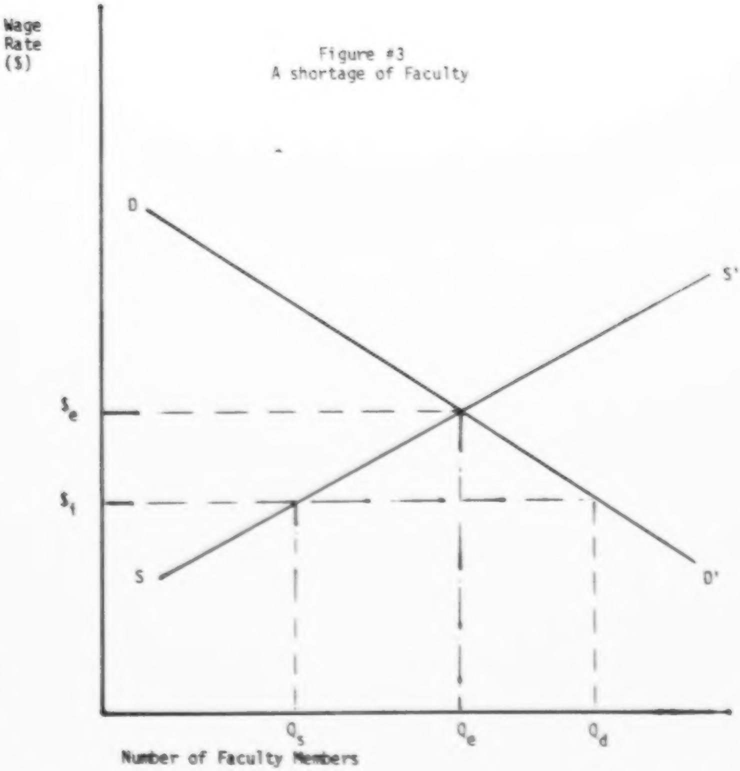


Figure #3
A shortage of Faculty

THE AGING OF COLLEGE FACULTY: INSTITUTIONAL CONCERNS AND FACULTY NEEDS

Chandra M. N. Mehrotra
College of St. Scholastica

This is the age of aging. Profound demographic shifts are pushing the average age of the population upward, and because of lower birthrates and longer life expectancy, this trend is likely to continue. The aging of the population creates new problems in every aspect of society, including the world of work: both employers and employees must make major adjustments to deal with the transition from a younger labor force to an older one. These problems are especially acute in the case of colleges and universities. What is so different about the situation in institutions of higher education as compared to other work settings? First, college professors are a highly select group of professionals in terms of their verbal abilities (their vocabulary, comprehension, information, writing abilities and so on). Most of the work that they do depends on these abilities, which do not show significant decline until after the age of seventy. Thus, a large percentage of faculty members continue to contribute beyond the normal age of retirement. Second, due to tenure system and to relatively little movement from academia into other kinds of work, colleges and universities have a low turnover rate. Third, institutions of higher education in the United States currently are experiencing a limited or no-growth situation. Finally, in view of the rapid development and advances occurring in all fields of study, these institutions must bring in recent Ph.D.s in order to maintain an adequate inflow of new ideas and skills. Thus on the one hand we have a large number of faculty in their forties and fifties who want to continue working until they are at least seventy, and on the other hand, we have a no-growth situation that makes it difficult to infuse new blood into institutions of higher education. In this paper we examine these problems and challenges and explore innovative practices that can be beneficial to the institutions as well as to the members of the faculty.

The Age Structure of College Faculty.

The median age of college faculty in the United States has increased from thirty-nine in 1968-69 to forty-five in 1978-79 (Bayer, 1970; National Science Foundation, 1981) and it is projected that it will continue to rise until about the end of the century (Cartter, 1976; Corwin and Knepper, 1978). As pointed out by George and Winfield-Laird (1984), this increase is mainly due to two reasons. First, higher education is expected to remain a limited or no-growth industry for the foreseeable future. Second, the majority of college faculty members are middle-aged; consequently, the academic labor market is not expected to be substantially affected by out-migration due to retirement for fifteen to thirty more years.

Table 1 presents the distribution of doctoral scientists and engineers employed in American Educational Institutions in 1977. These data indicate that more than half of the science and engineering faculty are thirty-five to forty-nine. This means that even if faculty are replaced at a level equal to retirements, the age structure of the college faculty will not alter significantly in the near future. Although the aging of college faculty is a general pattern, the extent and range of aging varies across academic disciplines. One finds significant differences in the median age of faculty in "younger" disciplines (computer science, mathematics, and environmental sciences) and "older" disciplines such as electrical engineering, mechanical engineering, ayricultural sciences and humanities (Bayer 1973, Cartter 1976).

Table 1

Age Distribution of Doctoral Scientists and Engineers Employed in Educational Institutions, 1977

Age	Number	Percent
Under 30	5,423	3.3
30-34	30,126	18.5
35-39	37,225	22.8
40-44	25,832	15.8
45-49	22,178	13.6
50-54	17,901	11.0
55-59	13,112	8.0
60-64	7,697	4.7
65 and Older	3,421	2.1
No Report	186	.1
Total	163,101	100.0

Source: National Science Foundation. Characteristics of Doctoral Scientists and Engineers in the U.S.: 1977. Washington, D.C.: U.S. Government Printing Office, 1979, p. 6.

The negative effects associated with aging faculty include the increased cost of higher education, reduction in administrative flexibility, limited inflow of new ideas and skills, and restricted employment opportunities for minorities and women (George and Winfield-Laird, 1984). The fact that there are limited opportunities for recent Ph.D.s interested in teaching may further deter college graduates from undertaking doctoral study in preparation for a career in teaching and may lead to a decline in the ability level of those who do enter graduate study. Thus, the challenge for American colleges and universities is that of balancing the interests of higher education (specifically, the generation of new knowledge, provision of quality education, and maintenance of the viability of academic careers for young adults) while meeting the needs of and utilizing the talents of mid-career and seasoned professors.

Faculty Needs

The institutional concerns are at least in part due to the age structure of the faculty; let us now look at the situation from the point of view of the faculty members. Senior faculty members have important needs that have significant implications for institutional policies and programs. According to Erikson's landmark theory of human development, a principal task of adult life is the quest for a sense of generativity -- a need to produce something that will outlive oneself, to leave one's mark in some way. In addition to Erikson's theory, there are other theoretical frameworks related to human needs that can be applied to faculty career development -- such frameworks as provided by Maslow, Alderfer, and McCluskey. An important implication of these theories is that both younger and older faculty members need opportunities for growth so that they continue to realize their potential. Realization of these needs will lead not only to higher levels of job satisfaction in faculty members of all ages but also to teaching improvement and the generation of new knowledge.

Faculty Characteristics

Since one of the institutional concerns deals with the issue of faculty performance, this section discusses faculty characteristics relevant to teaching. Though real declines do occur in vision, hearing, reaction time, and sensory motor functions in later life, one can compensate for some of these losses, and most of them have little impact upon academic performance (McKeachie, 1983). A recent survey of college faculty conducted by Hansen and Holden (1981) indicates that this group is a longer-lived and healthier one than is the general population. These investigators report that from age sixty onwards, death rates for faculty are only about half those of the general population; life expectancy is from twenty-five to forty percent longer. One implication of these findings may be that there is less decline in the above functions for college faculty than for the population in general. Consistent with the saying "use it or loose it" faculty members are able to maintain the functions they use on a regular basis.

Probably the characteristics most relevant to teaching, research, and community service is that verbal intelligence -- the abilities, as measured by Wechsler Adult Ingelligence Scale, involving vocabulary, information, and comprehension. Recent studies indicate that these abilities are maintained beyond the age of seventy. In addition, we do not find significant age differences in the performance of activities in a particular place of employment. Very little is presently known about how experience changes the nature of skills, but it does lead to dramatic improvements in the efficiency and effectiveness of performance. It follows, therefore, that many highly practiced activities may be maintained at a constant level despite age-related declines in component abilities because of the compensating effects of greater experience and because of effective use of maintained abilities. McKeachie (1983) reports that teaching effectiveness is indeed maintained by faculty members as they age.

Finally, learning ability does not decline significantly with advancing age, and any decline that does appear is often more related to motivation and physiological condition than to learning capacity (Schaie and Willis, 1979). It follows, then, that faculty members in their forties and fifties can benefit from faculty development activities, can learn new skills, and can assume new responsibilities. Nevertheless, it is important to remember that there are substantial differences in abilities, maintenance patterns, and willingness to assume new responsibilities. In adulthood the developmental tasks of the individual change, and the objectives of the individual may no longer be primarily directed toward skill acquisition but toward the application of acquired skills to responsible social roles and social tasks. It is, therefore, important to determine which individuals are still interested in acquiring new skills and which ones are more inclined toward the application of skills they already have.

Innovative Approaches to Utilizing Senior Faculty

Harris and Associates (1981) report that four-fifths of the workers between fifty-five and sixty-four years of age are opposed to stop working completely. Studies of the college faculty indicate similar trends. A recent survey by Hansen and Holden (1982) to study the faculty response to the change in mandatory retirement age showed that a large number of professors had indeed decided to delay retirement. The challenge for colleges is how to utlize these valuable human resources. Some possible work options, based upon experience in business and industry, are presented below.

Phased Retirement. Because college faculty maintain better health than their counterparts in other professions and because they prefer to keep working beyond the retirement age and are able to maintain teaching effectiveness, there is a clear need to explore the option of gradually decreasing their hours and responsibilities over a period of several years. This option provides opportunities for junior faculty and opens up new positions for young adults interested in an academic career. In a study conducted for the American Management Association by Robert Jud (Buchmann, 1983), researchers found that higher paid managers were most likely to choose to continue working on a reduced schedule and less intensity. Variation on the phased retirement theme include rehearsal retirement and job reassignments. Both the favorable experience with these approaches in business and industry and the interest of older faculty in reduced work hours point to the need for increased use of these options in institutions of higher education.

Baldwin (1984) has suggested that the unique talents of selected senior faculty can be utilized by giving them fresh assignments -- assignments that provide them with new challenges and opportunities and at the same time enable the institutions to achieve their goals. Examples of such assignments include working in the development office to initiate new proposals, contacting alumni for fund raising and other purposes, working with junior faculty to explore new areas for collaborative research, reviewing and commenting on grant applications prepared by others, teaching introductory courses, performing interdisciplinary teaching, sharing expertise with community at large, and assisting the admissions staff in making contacts with prospective students. This is not a comprehensive list but it is given here to indicate the large variety of possibilities from which the selection can be made depending upon the individual's background and interest and the institutional needs. On the basis of our favorable experience with some of these approaches at St. Scholastica and at the University of San Diego we can recommend them to other institutions.

Part-Time Employment. This approach allows the faculty to work less than the prevailing standard number of hours on a continuing basis. Generally, the requirements of teaching experience, specific competencies, and the terminal degree in one's discipline have restricted the supply of part-time faculty, especially in smaller communities. But these attributes are not lacking in the older faculty, a subgroup with growing interest in part-time employment. The economic advantages that accrue to employers of part-time faculty in general may be increased further when these faculty are drawn from senior members. They have competencies and skills that match institutional needs, have the wealth of experience and good work habits, and are familiar with the policies and programs of the institution. A number of colleges and universities have, therefore, developed programs of part-time employment for senior faculty. One such program (referred to in the preceding section) is offered by the University of San Diego. This program allows participants to phase down the reduction in time-base gradually, or initially to reduce an appointment at a certain fraction and remain at that fraction until full retirement. Since interest in part-time work is significantly related to the individual's perception that this is an available alternative, the availability of this option should be publicized.

Contract Employment. The experience of business and industry indicates that the employment of retired faculty as independent contractors offers interesting opportunities. This option deserves special attention in view of the rapid advances of technology in education. Projected cost reductions will make microcomputers accessible to a large segment of our population, and the need for instructional software will continue to grow. Retired faculty members with valuable teaching experience can make important contributions in developing and reviewing computer software for instructional purposes. Editing books, monographs, and journals on a contract basis offer another possibility for employment. Other related possibilities include reviewing instructional materials prepared by others, evaluating grant proposals for funding agencies, and writing test items for national examinations. In short, we suggest the use of contract employment option in meeting the needs of retired faculty members who are unable to participate in other programs described here. This approach provides them with flexibility in terms of working hours, allows them to be selective in the amount and type of work that they undertake, enables them to continue using their abilities, and permits them to make useful contributions as long as they are able to do so. That they can do a large portion of the contract work at home and still maintain some contact with the academic world makes this option even more attractive.

Conclusion.

We have suggested some alternatives that would extend the working life of senior faculty and would facilitate the transition from full-time work to complete retirement. We are not implying that these options will be used by all senior faculty. But making various options available is important in view of the finding that how much choice people perceive they have over important things in their lives influences their happiness, their ability to perform, and their sense of well-being.

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INSTITUTIONAL PLANNING AND EVALUATION

WEDNESDAY, 3 JULY

1530 - 1700

INSTITUTIONAL EVALUATION
IN HIGHER EDUCATION
IN QUEBEC

Claudine Baudoux, Ph.D.
Université du Québec à Chicoutimi

A committee of the Commission on Higher Education of the Higher Council of Education recently studied (2) the evaluation practices in universities. After studying various documents and visiting several universities, the committee appeared to think that no Quebec university had an official and systematic institutional evaluation policy, at least as far as this concept is usually understood. This phenomenon can perhaps be explained by the fact that no law or rule obliges them to have such a policy.

If, strictly speaking, there is not any systematic undertaking of institutional evaluation, evaluation nonetheless exists in various forms and continues to be developed in universities, be it the evaluation of planning, programs, personnel or services. This evaluation is more or less systematic, and more or less formalized according to which university is involved, and even according to which faculty, sector, department or school, and this is all due to the principle of institutional decentralization.

Large-scale universities have created a planning service or institutional research offices (some of which are having difficulty surviving in the face of financial austerity), which supply information, instrumentation and advice to various university parties. These offices collect, treat and analyse the data that are most significant for the administration. Moreover, the Conference of Quebec University Rectors and Principals (CREPUQ) conducts studies and evaluations on different subjects, such as the overall financing of universities.

Although, recently, ad hoc evaluation experiments of three-year plans reflect this concern of the university's to give accounts to society of the way in which it executes its mandate, the institutional evaluation practices are usually in terms of sector-based evaluation of programs.

The universities in Quebec are responsible for the conception and review of their training programs. The bachelor's programs (1) and graduate programs are the subject of an a priori evaluation of the Council of Universities which makes a study of their opportuneness, while taking account of the needs of the university network, after the university itself has made a study of quality. The latter can obtain the point of view of a CREPUQ evaluation committee. When the program has been approved, the establishement decides on setting it up, modifying it, or suspending it.

Most universities have institutionalized their program evaluation system (or are in the process of doing so); an examination of these different systems reveals considerable differences in the approaches used.

In a recently published article in journal Enseignement et Gestion (4), we pondered over the question of an administration's choice of the type of institutional evaluation of programs. An examination of Quebec experiences in relation to the environment in which they are situated allowed me to propose a hypothetical grid that would distinguish four evaluation strategies which we shall recall here, although they can be differentiated in these circumstances only in a way that must inevitably be arbitrary and oversimplified.

These strategies can vary in accordance with the degree of autonomy of the universities and the objectives, which, depending on the case, the Ministry of Education, the administrators or the university community aim for through this evaluation (maintaining the program at all cost, improving it, reorienting it, suspending it for a determined period or not, or suppressing it), but also, as we shall see later on, on the culture of the university and the management style of its administrators.

Let us recall the theories dealing with the university as an organization before taking up the four strategies that we are proposing as hypotheses and that we shall, finally, relate to the Quebec experience of evaluating programs.

1. The university as an organization

1.1 The university is an organized anarchy

Several authors (5, 6, 7) have point out that universities constitute a classic example of organized anarchy. One of them, Enderud (p. 269) says that organized anarchy is characterized " by the ambiguity of its objectives (which are badly defined or divergent) and its technical and structural aspects, by very irregular participation, and by the high degree of autonomy of its subordinate units", qualities that are accompanied by a high degree of specialization.

1.2 But which constitutes a peculiar saga

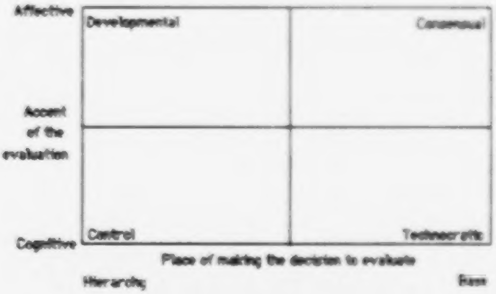
Above and beyond this common characteristic of organized anarchy, every university remains a unique and original institution that cannot be reduced to abusive generalizations.

Some authors (8) speak of a university "saga" to indicate the specific culture of each milieu. This saga, which is their own collective unconscious, is characterized by the aftermath of past history which partially determines its future history. This saga, made up of obvious facts shared in common by university members, and professors in particular, but also by key members of the administration, often has the effect of reducing, at the moment of drawing it up, the scope of solutions at the moment of decision-making.

2. The four strategies

We can place the strategies at any point in Table 1, depending on whether the accent is put on the affective or cognitive stage (9), which varies according to the university's culture, and also depending on whether the place where the decision to evaluate is taken is the hierarchy or the base, which varies according to the administrators' management style.

Table 1


Affective
Developmental
Consensual
Accent of the evaluation
Control
Technocratic
Cognitive
Place of making the decision to evaluate
Hierarchy
Base

2.1 The accent put on the cognitive or affective stage

The steps that become legitimate in the cognitive stage are those that attempt to give evidence to the internal coherence of the evaluation of a program and " the mechanism for including it in the organized universe of one person or a group of people" (9, p. 34). Those that become legitimate in the affective stage are those that favor the acceptance of the evaluation by leading to its being integrated into the actors' value structure. These two types of steps are subject to a lack of rigor, but of a different nature.

2.1.1 The cognitive stage

Some evaluation strategies only take account of the actors' values at the beginning of the route, at best. They rather emphasize a logical deductive chain that prescribes the precedence of ends over means.

This approach covers up the major inconvenience of reducing the human being to a pure demonstration of rationality whose logic draws aside from any problem of interest, power relations and affective considerations. It does not take account of infringements to any decisional strategy, which are, according to March (10), limited rationality, contextual rationality, strategy rationality and process rationality, thus bringing up important epistemological problems. In any event, the evaluation results then normally enjoy a certain technical credibility, depending on the degree of tightness of the deductive chain.

2.1.2 The affective stage

The strategies that favor the affective stage involve, throughout the whole process, the subjectivity of the actors, considering that the evaluation is a political operation in which value conflicts between different actors are not only inevitable but also provide food for thought, and taking account of the cognitive and affective limitations of the actors.

However, even if these steps are well accepted in the milieu and enjoy a certain political adhesion, they are not exempt from methodological expedients due to taking the actors' subjectivity into consideration.

2.2 The place of the evaluation decision being in the hierarchy or in the base

The decision to evaluate can come under the authority of decisional bodies, but it can also be taken by those people who are reponsible for a program or those working within this program, to whom the administrators would make an institutional evaluation system available.

2.3 Corresponding strategies

2.3.1 The control strategy

When administrators want to obtain the most faithful portait possible of the program to be evaluated, especially if it is quantitative, with the view of uncovering lacunae to be corrected or revealing the possibility of closing down the program, the control strategy is chosen.

2.3.2 The technocratic strategy

Administrators choose the technocratic strategy when they want the base to obtain the most faithful picture of the program possible, even if it means facing up to a certain lack of political adhesion. The objective that is most often aimed at, in this context, is to keep the scope of decisions as wide as possible.

2.3.3. The developmental strategy

Administrators adopt the organizational development strategy when they want to obtain the largest political adhesion possible while reserving for themselves the decision to have a program evaluated. It should be recalled that any decision about organizationnal development, according to the theoreticians, is implemented by the summit of the hierarchy. In this strategy, the scope of decisions is likewise kept as large as possible.

2.3.4 The consensual strategy

Administrators give their vote to the consensual strategy when they want the base to take the decision to evaluate a program and have as much political adhesion as possible. In this case, there is normally no question of rejecting a program since the goal of the evaluation is to improve or reorient the program.

3. The Quebec experience and theories about university

We have pointed out, in the article already quoted (4), that at least one institutional program evaluation system in Quebec corresponds to each strategy. Now, after several years of experience, it can be said that those institutional evaluations the best respond to the criteria of credibility and viability are the ones that are on the right of the graph, i.e. the consensual and technocratic ones. Should this phenomenon be related to the functionning within organized anarchy that is characteristic of universities, at least North American ones? It seems seductive because of the collegial nature of the decisions taken by various bodies and because of the members' interest for their institution.

Moreover, we have advanced another hypothesis, which subsequent work done internationally could verify: i.e. the culture of the university determines the choice of a consensual or technocratic evaluation. For example, a small university, in which interactions multiply, would more naturally choose a consensual type evaluation, whereas larger universities would rather have recourse to a technocratic evaluation.

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ASSESSING INSTITUTIONAL EFFECTIVENESS:
THE MARKETING AUDIT

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As more universities have become involved in planning strategic marketing activities, they have begun to gain an understanding of the significance of the external environment. For example, in the United States, the disturbing dip in the number of "traditional-age" college students (which will continue to decline until reaching its nadir in the mid-1990's) has caused many university officials to re-examine institutional goals and direction. Some have responded by seeking to serve newly identified segments of the student "market" (e.g., the adult learner); others have chosen to communicate their institution's basic strengths more aggressively than before to potential student populations.

Regardless of the specific form of adjustment ultimately chosen, many universities now recognize their need to pay attention to changing demographic patterns, which are, in turn, soon reflected in the expressed educational needs and aspirations of students. Such an external view in the past was largely limited to activities related to alumni affairs, athletics, or university fund development. The move toward an examination of the interests and desires of potential students, as well as of the reactions of current students to their past experiences on campus, represents a major shift in university planning efforts toward a greater marketing orientation.

Many of the concepts and tools of marketing lend themselves readily to the non-profit organization and, specifically, to universities. For example, as noted above, environmental monitoring points to such critical areas as changes in population patterns; similarly, techniques of market research (such as survey design and analysis) can reveal much about student attitudes and preferences. In fact, successful university programs can be developed, modified, delivered, priced, and promoted with the aid of elements of marketing strategy.

Assuming that planning processes have resulted in the identification of marketing-oriented activites consistent with the university's mission, the stage is set for implementation. But, once completed, how should these tasks be evaluated? How shall the outcome of the total marketing effort be judged? To answer these concerns, another useful managerial tool may be applied--the marketing audit.

The primary function of a marketing audit is the study of an organization's marketing management activities "for the purpose of determining and appraising what is being done and recommending what should be done in the future" (Kotler 1975).

The marketing audit attempts to help the institution assess its capability by evaluating the entire marketing function, focusing on objectives and policies. The audit "aims for prognosis, as well as diagnosis" (Berkowitz 1983). Taking a positive view (i.e., looking for opportunities) while concurrently facing up to problems and weaknesses, the audit "practices preventive, as well as curative marketing..." (Ibid.)

Indeed, one of the major advantages of conducting a marketing audit is that it heightens objectivity in the evaluation of organizational effectiveness. According to Rados, "In all but the best managed organizations, the auditor is sure to find substantial discrepancies between what the organization says it is doing and what it is actually doing, and between what it says its objectives are and what they actually are" (Rados 1981). The results of such a comprehensive marketing audit would assist in identifying aspects of current operations which are functioning well, those which need strengthening, and areas posing threats or opportunities for future programmatic activity.

The consumers of a university's services are its various "publics", the most notable of which is, of course, its student population. A consumer focus is the basis for the "marketing concept", the principal philosophy undergirding marketing. Essentially, the marketing concept maintains that an organization will tend to achieve its own objectives most effectively by paying careful attention to the changing needs and desires of consumers. Consequently, the university administration must study the characteristics of its students (e.g., in terms of their numbers and the ways in which the student population might be productively divided for planning purposes into smaller homogeneous groups).

As noted above, the marketing audit provides a framework for evaluating the effectiveness of an organization's marketing program. The structure of this framework can be helpful to those entering for the first time into the realm of marketing, as well as to those with a well-honed and experienced marketing background. Kotler and others have developed models of the marketing audit for non-profit organizations. In what follows, the marketing audit is specifically adapted further to the university setting.

A tripartite division of the marketing audit process for a university results in a systematic examination of the institution's external environment, its resources and capabilities, and finally, its strategic marketing activities.

1. The External Environment

In reviewing the university's external environment, the marketing audit begins by identifying the institution's major markets. In particular, it is important to highlight principal target groups or market segments within the total college-bound population. The university should define each such segment as precisely as possible, including reference to any special characteristics and its actual and potential size.

Market analysis can also be extended to a study of the attitudes of each identified group toward university education in general (as well as concerning the specific institution itself). Through such activities, the university can more clearly determine if it is communicating properly with potential students and, most importantly, whether it knows how students' needs and interests are changing. A similar analysis should be performed for any other relevant market segments of the university (e.g., its donors).

Universities face a variety of forms of competition, the most obvious of which are other institutions of higher education. Yet, ironically, as society becomes more leisure-oriented, potential students often have other tempting alternative options open to them for the use of their time. Along with the trend toward part-time study sandwiched into a working life has come a greater awareness of this special form of competition. Thus, university planners must be aware of all existing types of competition for higher education, as well as of changes which might be predicted concerning forms of future competitive activity.

Finally, the external environment includes other forces over which the institution has little or no direct influence. The principal "uncontrollable" elements of the external environment include: socio-cultural dynamics; overall economic conditions; legal-political developments; and technological change. Since each of these may have powerful implications for the nature of educational services offered by a university, it is crucial that planners consider possible impacts on their institution.

2. Resources and Capabilities

Having examined the "uncontrollable" forces of the external environment, the marketing audit next moves to evaluate the internal environment--that is, how well the institution is prepared to deal with the problems and opportunities represented in the external environment. In other words, the auditor seeks to find out whether the university is capable of coping with the conditions surrounding it. Lovelock and Weinberg emphasize the importance of knowing the organization itself: "Successful marketing programs are based on matching the abilities and aims of the organization to the needs of relevant external publics..." (Lovelock and Weinberg 1984).

First, the university should have well-defined and measurable objectives. Such objectives should be realistic: as Kotler notes, "objectives are not supposed to represent exercises in wishful thinking but rather the results of appropriately chosen goals for the organization given its environmental opportunities and constraints". (Kotler 1975).

Next, the university's capabilities for marketing can be viewed partly in terms of its budgetary commitments for such activities. Specifically, adequate resources must be available to accomplish the marketing job. Similarly, such resources should be allocated in conformity with the marketing objectives. Unfortunately, there may be constraints represented by budgetary stringency or legislative restriction which limit the nature and extent of activities which can be planned for in developing marketing strategy.

Also, there should be a written marketing plan detailing how resources should be allocated to various constituent parts of the overall program. A marketing information system is essential to yield data for planning purposes. Provision should be made for evaluation of the effectiveness of each year's marketing activity.

Finally, the university's organizational structure should include a high-level visibility for those charged with managing the marketing plan. If needed, additional training should be provided to university administrators to ensure reinforcement of the critical philosophy of the marketing concept throughout the institution. Lovelock and Weinberg issue an instructive warning: "Although organizations can occasionally prosper for a while under innovative leaders and the inspirational development of programs, extended success usually requires an ongoing system. One of the most serious errors an organization can make is to assume that the strategy that launched the organization will remain appropriate over time." (Lovelock and Weinberg 1984).

3. Strategic Marketing Activities

The university's current program, however limited it may be, should be studied to see if it is capable of achieving the institution's stated objectives. Unfortunately, "very often, this question reveals that the organization has no core strategy, only faith that it will succeed by doing a good job" (Kotler 1975). In any case, the audit can be used to pinpoint areas where marketing strategy can be more effective, so that planning efforts can be strengthened.

The audit should examine the university's use of the key elements of the marketing mix which underlie marketing strategy (i.e., product, price, promotion, and distribution). Without orchestrating a harmonious interplay among these four principal controllable variables, the institution will be hard-pressed to reach its marketing objectives.

The "products" of the university are, of course, the constituents of its rich panoply of educational services. For purposes of the marketing audit, planners should describe the principal services, both in generic and specific terms. The general state of health of each program--past, present, and future--should be assessed. Possibilities of new forms of service delivery should be considered at this stage.

Next, the element of pricing is introduced. In particular, the audit addresses the basis for price setting (e.g., are tuition and other fees determined in relation to considerations of costs of services, demand, and/or competition?) Similarly, the sensitivity of students to pricing changes is important since it reflects their likely response to higher or lower fees.

Distribution analysis incorporates consideration of alternative methods of providing educational services that might be less costly to the university or which might expand services to viable target groups that are presently underserved. The audit also seeks to discover attitudes of present students toward the quality of existing services.

In communicating with external publics (i.e., with students, donors, governing bodies, and the general population), universities have available an array of promotional methods. The principal goals of such activity are to inform, persuade, and/or remind others about the existence and nature of the university and its programs. Much promotional activity is designed to create and reinforce an image (or a multiplicity of images) reflecting the university's concept and mission.

The marketing audit examines each element of the promotional plan. For example, the staff assigned responsibility in areas such as recruitment, fund development, alumni affairs, and public relations must be adequate in size and training for the task at hand. It may be useful to organize some of this activity be specializing along the lines of identified market segments. Similarly, the university's efforts in advertising can be judged by reference to its stated advertising objectives, by ensuring that sufficient funds have been budgeted, and that the selection of approach, theme, and media placement is well thought-out. Finally, a university's public relations program should be carefully planned and guided by an overall understanding of the institution's intended image.

The marketing audit can probably be performed most effectively by an outside objective observer, preferably one familiar with the particular characteristics of institutions of higher education. Nonetheless, even if carried out simply as an internal tool of control, the marketing audit provides a powerful framework with which to focus on how the university operates its marketing activities. By using the marketing audit to review its external environment, resources and capabilities, and the nature and extent of the university's strategic marketing activities, administrators will be better able to assess problems and opportunities confronting the university and, thus, enhance institutional effectiveness.

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STRATEGIC MANAGEMENT IN ACADEME: A COMPARISON OF THE INTERNAL AND EXTERNAL EVALUATION OF INSTITUTIONAL EFFECTIVENESS AND ITS RELATIONSHIP TO SETTING STRATEGIES FOR LONG-RANGE SURVIVAL

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Introduction

In 1980, Clark Kerr and his staff, in "Three Thousand Futures: the Next 20 Years in Higher Education", wrote:

> "Taking as a starting point 1530, when the Lutheran Church was founded, some 66 institutions that existed then still exist today in the Western World in recognizable forms. (These are) the Catholic Church, the Lutheran Church, the parliaments of Iceland and the Isle of Man, and 62 universities. Universities in the past have been remarkable for their historical continuity ... and have come out less changed than almost any other segment of their societies." (Kerr, 1980, p. 9)

Given the extraordinary staying power of universities through history, it is perhaps remarkable that many universities - - including those that branched and blossomed in the burgeoning 1950's and 1960's - - are, in fact, far from alive and well. Historically, in Western society, universities have won a special place as indispensable institutions, worth "guarding and fighting for as one would a religion or a parliament." (Keller, 1983, p. 151) But survival strategies of past decades - - be they political, religious, endowment, or regional pride - - are perceived as decreasingly effective today as local governments face increasing pressures to assert control, even restraints, over university decision making.

The turbulence of the environment, and the complexity of operations, mean universities need a systematic approach to decision making through strategic planning. The new strategic institutions are faced with the question of basic priorities. These range from the balance of teaching and research, and of undergraduate and postgraduate activities, to that of growth, scale and diversity of interests. The university is required to deploy its resources both effectively and efficiently in a market that is becoming more competitive. To survive, as already noted, the university needs to think strategically. (Thomas, 1980)

To this purpose, there are numerous planning models now being produced around the world. (Keller, 1983; Cope, 1978; McManis and Harvey, 1978). Doyle and Lunch (1980), Sizer (1981), Parekh (1975), and others have developed comprehensive models for educational institutions. As with many of the corporate strategic planning models, most of these suggest a clear need to systematically set goals, to assess the environments for opportunities and threats in view of the present and future strengths and weaknesses of the institution, to determine and implement options which will differentiate the university from others. Further, they require a system for continual feedback and strategic adjusting in response to changes either externally or internally. (Ebert, 1983)

But although planning appears to be beneficial to the academic institution, most universities seem very slow in adopting the practice. As Shelly Umans indicated:

> "Educators, it is charged, tend to be reactors rather than planners. If this is so, the patchwork quilt of random ideas that we call education fails of its purpose - - to educate. Change can no longer be haphazard. It must be active, as opposed to reactive; planned and systematic, as opposed to pragmatic and expedient. Planning is essential to education." (Umans 1970).

Indeed, Boxx and Johnson's study of planning practices in universities found that fewer than 36% of universities formulate strategies; fewer than 43% evaluate their performance; and fewer than 46% develop criteria to measure success. (Boxx and Johnson, 1980)

Background

Nova Scotia's Royal Commission on Post-Secondary Education was established in March, 1983, the first Royal Commission of its kind in the Province's history. Its overall mandate was to determine the direction in which post-secondary education should go through to the year 2000. In a province of some 850,000, no fewer than 13 degree-granting institutions had developed -- some in recent years -- and some $150 million represented the annual expenditure on higher education, 73 per cent from public funds. At the time of the Commission's establishment, Nova Scotia had already cut back existing post-secondary education budget increases and warned of further reductions to come; Federal Government funding for higher education was also threatened.

Following its establishment, the Commission issued a six-page set of guidelines for those individuals or organizations wishing to make submissions. These covered five main topics the Commission saw as "significant", but did not exclude others which might be raised. The five areas for which comment was requested were:

1) Needs, hopes and objectives for post-secondary education in general, and Nova Scotia in particular.
2) The governance of higher education in the Province.
3) Financing of higher education.
4) Accessibility to post-secondary education.
5) Coordination and centralization of control of educational programs.

The Royal Commission held a series of public hearings in late 1983 and early 1984, and planned to submit its findings and recommendations by the second quarter of 1985.

Methodology

Of the 13 degree-granting institutions in Nova Scotia. the strategic plans of five were chosen for examination. Each of these was a mature, multifaculty university, two of them serving semi-rural regions of the Province and three serving a growing urban metropolitan region.

Strategic Planning Processes

The strategic planning process of the five institutions in the sample were examined within the six-category, conceptual framework designed by Keller in Academic Strategy (1983, p. 152)

For the purpose of this study and because of information limitations, Keller's framework was slightly modified so as to include five of the six categories. Given that the authors did not have any data on the leadership abilities of the management or chief executive officers, this category was deleted.

The first to be studied was the Values and Aspirations of the university. The authors were concerned with identifying if the institutions had a comprehension of their history. It was believed the universities need a sense of their past to determine their future. (Keller, 1983; Ebert and Wehrell, 1984). Further, the aspirations, mission, and goals were identified and examined in an attempt to identify the specificity, appropriateness, and existence of the objectives of the institutions.

The second category under review was the universities' Internal Strengths and Weaknesses - - comprising a wide spectrum, including location, scholarship, financial situation, physical plant, faculty, and programs. This part of the examination entailed discovering each university's self concept.

The third category under study was the impact of the External Environment, which included an analysis of each university's perception of the impact of such variables as technology, economic forces, politics, social change and stakeholder views. The authors looked for the identification of future trends, threats, opportunities or constraints.

The fourth category, Market Characteristics, was studied to identify if the universities knew the "who, what, when, where, why, and how" of the market they were serving. The authors examined if the institutions had identified any strategic windows or opportunities to direct their thrust into the future.

The final category under examination was the Competition. The authors identified if the universities knew who the key players were; what were their various strategies; and what potential competitive threats or opportunities existed on the horizon.

Strategic Choice

From the individual submissions to the Royal Commission, from the authors' knowledge of their recent past histories, and from testimony offered orally at a series of hearings conducted by the Commission, actual strategies selected by each were examined. These were compared and contrasted according to the categorization offered by Glueck and Jauch (1985) for organizational grand strategies. (See Table 2)

Analysis

Planning Process

First step in our examination was to search the submissions of each of the five universities for responses to series of questions in each of the two internal and three external sets of criteria for academic strategic planning processes. These responses are shown in Table 1. From a search of the various submissions, as well as concluding recommendations and responses to Commisson queries, descriptions of the responses to the questions were categorized according to their degree of explicitness - - elaborate, partial or minimal - - or to their exclusion or non-existence.

Table 1 STRATEGIC PLANNING PROCESSES

		Elaborate & Precise Description*	Partial & General Description*	Minimal & Implicit Description*	No Description*
VALUES AND ASPIRATIONS	Comprehend history?	DAL SMU SFX	ACA MSV		
	Identify aspirations?	ACA DAL MSV	SMU SFX		
	Identify mission?	DAL MSV	ACA	SMU SFX	
	Set specific goals?		DAL MSV	ACA SFX	SMU
STRENGTHS AND WEAKNESSES	Academic strengths?	ACA MSV SFX	SMU	DAL	
	Academic weaknesses?			ACA DAL MSV SMU SFX	
	Financial strengths?	ACA MSV SFX	SMU	DAL	
	Financial weaknesses?			ACA DAL MSV SMU SFX	
IMPACT OF EXTERNAL ENVIRONMENT	Technology?		MSV SFX	ACA DAL SMU	
	Economy?			ACA DAL MSV SMU SFX	
	Political Forces?	MSV	ACA DAL SMU SFX		
	Stakeholders?		ACA MSV SMU	DAL SFX	
	Social Change?			ACA MSV SMU SFX	DAL
MARKET CHARACTERISTICS	Trends?	MSV SFX	ACA	DAL SMU	
	Segments?	MSV	SFX	ACA SMU	DAL
	Profile?	MSV		ACA SMU SFX	DAL
	Preferences?	MSV		ACA SMU SFX	DAL
COMPETITION	Key players?	ACA	MSV SMU	DAL SFX	
	Various strategies?		ACA	SMU	DAL MSV SFX
	Potential threats?			ACA	DAL MSV SMU SFX
	Potential opportunities?	ACA	DAL MSV SFX	SMU	

* ACA - Acadia University
DAL - Dalhousie University
MSV - Mount Saint Vincent University
SFX - St. Francis Xavier University
SMU - Saint Mary's University

As can be seen, three of the five universities are characterized by minimal and implicit attention paid to such strategic planning criteria as academic and financial strengths and weaknesses. Two (Mount St. Vincent and Acadia) showed greater attention to either somewhat general, although partial, descriptions, or elaborate and precise descriptions. Only one university (Acadia) was deemed to have addressed all criteria for strategic planning, although responses to 10 of these, out of a total of 21, were seen as minimal. One university (Saint Mary's) was elaborate and precise in only one item of its responses. The largest university, Dalhousie, had the greatest number of non-responses (seven), more than twice that of the runner-up, St. Francis Xavier University.

While is was clear that most of the institutions had developed basic histories, aspirations, missions, and goals, the information proffered tended to be very general. Especially in the case of the mission statements and goals, the universities tended to write inoffensive motherhood statements that would not be useful for giving specific direction or for measuring success.

Although most of the institutions had a grasp of, and were willing to outline, their financial and academic strengths, none of the universities admitted to having any weaknesses. Most did argue there was a need for additional funding. This was generally a case of pointing a finger at the government and saying the government was not doing an adequate job as a provider. None of the schools had a very clear or detailed concept of its external environment. Each tended to avoid discussions of the impact of the economy, of technology, of stakeholders, of social forces, or as described by Ewing, "of the trend we hardly think of at all" (1980). There was general recognition that the provincial government can play a major role in the success or failure of the institutions, but most discussions lacked specifics as to how. There was a range of analysis on market characteristics. It was obvious that one school had spent a great deal of time and effort identifying whom it served, but this was an exception. Most universities could not identify much more than their enrollment patterns, with unclear conclusions about the future. Whether or not the universities recognized they were in a competitive environment, or saw the need to conduct an analysis of the competition, there was minimal discussion of the impact of strategies of other institutions.

Choice of Strategy

Second step in our analysis was to classify the perceived Strategic Choice of each university. The classification was based on descriptions of overall, or grand, strategies as developed by Glueck and Jauch (1985). From their stated histories, recent actions and objectives - - both those clearly stated and more vaguely put - - the strategic goals of each university were derived. These are shown in Table 2.

In contrast to inadequacies of self-reported descriptions of their strategic planning processes, the five universities had no difficulty in indicating their present and foreseeable strategic directions. While these were not always given in succinct and concise terms, they were, nevertheless, readily discernible. Stable strategies for two of the universities (St. Francis Xavier and Acadia) were explicit, being derived from accommodations limits imposed by their small-town settings. Specialization, in contrast to its stated mission of offering holistic education, give focus to Saint Mary's University's growth strategy. Leadership in graduate professions and continuing education characterized Dalhousie's growth and diversification strategy.

Table 2*

University Strategies in Nova Scotia

		Educational	Markets	Functions
Revise Mission	Expend	Add new programs Mount St. Vincent Saint Mary's	Find new students Mount St. Vincent Saint Mary's	Forward vertical Mount St. Vincent Saint Mary's
	Retrench	Drop old programs	Drop student	Become captive university
Stay as is	Maintain	Maintain St. Francis Xavier Acadia	Maintain St. Francis Xavier Acadia	Maintain St. Francis Xavier Acadia
Maintain Market Share	Expand	Find new courses & programs Dalhousie	Increase market share Dalhousie	Increase teaching capacity Dalhousie
	Retrench	Decrease programs	Reduce share	Decrease capacity
	Stable	Program refinement	Maintain share	Maintain efficiency

*Adapted from educational Institutions, from Strategic Management and Business Policy, p. 210, 2nd ed.

Each of the five universities, in fact, had few problems in identifying potential market niches for exploitation, engaging in what French marketers call "cherchez le creneau", or "looking for the hole" (Keller, 1983, p. 159).

Conclusions

Overall, the five universities displayed a lack of systematic and strategic review of their situations. As shown, they exhibited gaps and inadequacies in their definitions of their strategic planning processes; while broad mission statements were generally prevalent, specific and measurable objectives were noticeably missing. Absent, too, for the most part were assessments of environmental trends, market and competitive factors, and institutional factors (in particular academic program weaknesses).

Despite this, all institutions had no difficulty in arriving at overall strategies for the future. This willingness to embark on strategies without taking the necessary preliminary planning process steps characterized each university, evoking an image of intuitive thinking about the future or even an intent to "muddle through" in the absence of a careful scanning of trends and factors that bear on that future". Strategically speaking, they put the planning cart before the process horse.

Yet it seems certain just the opposite should be the case. Strategic decision making first mandates the processes of objective setting and external and internal scanning before strategies are selected (Allison, 1971; Porter, 1980; Glueck, 1984). Strategic planning processes must be undertaken before alternative strategies are developed and a strategic choice is made (Ewing, 1972; King & Cleland, 1978). In higher education, university strategists - key board members, administrators and faculty - must undertake the tough planning process first to arrive at a chosen strategy (Kotler & Murphy, 1981).

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INDIVIDUALIZED PAPER DISCUSSIONS

THURSDAY, 4 JULY

1100 - 1230

TEACHING RESEARCH TO TALENTED UNDERGRADUATES: AN EVALUATION OF A NEW MODEL

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The professor/researcher can utilize talented undergraduates in a variety of ways during the process of conducting research. At one end of the continuum, the undergraduate can be used as a technician. In this model the undergraduate takes only the low-skilled roles in the process, e.g., naive confederate, laboratory helper, or coder of data. The use of the undergraduate in these minimal roles is often justified on the grounds that the student is not sufficiently skilled or trained to contribute at a higher level. On the other end of the continuum, the student can work as a colleague and take a significant role in many phases of the entire research process. In this model, the professor/researcher works with the undergraduate to develop research hypotheses and together they develop the research design and experimental procedure. Most faculty would intuitively maintain that capable students benefit more if they are involved with the more advanced tasks of developing the study. However, there is little empirical evidence that demonstrates the positive impact of this type of research training on the careers and skills of capable undergraduates.

Solid evidence on this question is necessary because training undergraduates in this way places high demands on faculty time. For years the National Science Foundation in the United States provided support to faculty for this type of advanced training through their Undergraduate Research Participation (URP) Program. Elimination of this program raises the question of what type of benefits resulted from such experiences and what type of losses, if any, will students and the sciences experience by its termination.

To answer this question a telephone survey was conducted for a group of students who had participated between the junior and senior years in an intensive research experience and a nonrandomized control group of students who had not. The interview was designed to determine the effect of the research experience on two groups of dependent variables: self-assessment of research skills and the effect of this experience on careers in science (psychology).

Procedure

Subjects

Between January and April prior to participating in the 10-week summer research program, prospective participants who were in their junior year filled out an application requesting GPA, SAT scores, list of courses taken in psychology, two letters of reference, and a 400-word essay describing their reasons for wanting to participate in a research program in psychology. Applications came from most of the colleges and universities in the state of Indiana. Applications were rank ordered and the top 8 candidates were chosen each year for participation after an interview with the project directors and potential research supervisors.

This procedure was used for three years yielding 24 potential students in the experimental group. Of these 24 students, 22 were available for telephone interviews and made up the experimental group. For each of the three years, the next 8 persons in the rank-ordered list who were not included in the program made up the control group. From this group, 21 were available for the telephone interview and made up the comparison group.

Research Experience

The Undergraduate Research Participation (URP) experience was a ten-week, full-time, intensive program. Prior to the 10 week program, students were mutually paired with a researcher and conducted an initial review of the literature in their research area.

During the first two weeks students attended 6 seminars on creativity, experimental and correlational designs, computer skills, ethics, and report writing. During this initial two weeks they also met frequently with their research supervisor to develop a specific research study. Faculty supervisors were instructed to develop research ideas with students as a collaborative effort so that student participation would be maximized. At the end of the first 3 to 4 weeks students gave a 45 minute research design seminar in which they presented the theoretical development of their hypotheses, the research design, and experimental methods. Students were encouraged to critique each other's work and they listened to the critique and defense by faculty members and supervisors. Students ran the study and conducted the analyses with faculty available for advice.

After data were collected, students wrote an initial draft of a paper and presented their results and conclusions in a second seminar. For projects which were promising, further collaboration culminated in a paper presentation at a professional conference and/or a published article.

Dependent Measures

During the time that students in both groups were or would have been in graduate school a structured telephone survey was conducted which assessed the students' research opportunities and their perception of their research skills at the end of their junior year (at the time of application to the program) and at the end of their senior year. Thus, for the experimental group, the interview asked for the perception of their skills prior to participation and after participation in the program. For the questions on research skills, students rated their overall ability as a researcher and their specific abilities in doing a literature review, choosing a research design, running statistical analyses on the computer, and writing results and discussion sections of a paper. The questions pertaining to careers asked them to rank order the three professional areas (teaching, research, practitioner/clinician) in terms of their career preference. They also listed the graduate schools which they applied to, were accepted at, and received assistantships from. After the interview these schools were rated using the productivity ratings of psychology departments by Cox and Cox (1977). The quality of graduate program index was compiled for each interviewee by obtaining the average score of the three highest rated graduate programs which they applied to, were accepted at, and received assistantships from.

Results

Although students were not randomly assigned to groups, the groups were not significantly different on demographic variables (sex and age), performance measures (undergraduate GPA and advanced psychology test on the Graduate Record Exam), and scholastic aptitude (SAT and GRE). There were also no differences between students who participated in the URP program and nonparticipants in research experiences prior to participation in the URP program and research experiences following participation (e.g., number of research studies planned, number of research reports written, papers submitted to conferences and journals). Among all of these variables, the only significant differences between the two groups was that the URP participants scored 39 points higher on the SAT-V, $F(1,34)$ =

5.79, p<.05. Since the initial group differences were few and small, an ANOVA could have been used to analyze the data with the total SAT score or the SAT-V as the covariate. However, 25% of the students did not have SAT scores. Thus, considering the remarkable similarity of the two nonrandomized groups, a covariate was not used.

Research Activities

The survey of the talented undergraduates in both groups indicated that they participated in many research activities during their undergraduate years. On the average, they were confederates or research assistants in one study during each of their college years. They also participated in the planning of three research studies and wrote 3, 10-page reports of their research. Most of this work was probably part of a research course because of the high proportion of research reports that were part of a class requirement. In contrast to this high level of research activity, there were few papers submitted to conferences or journals. This discrepancy suggests that the research work was of a low quality and/or students participated in these research activities as a technician and not as a major contributor. (It should be noted that the responses to these items excluded their work in the URP program.) When considering all students in all non-URP research activities, only 15% of the 40 students who planned a study at any time during their undergraduate years actually submitted a paper for presentation at a conference.

When the outcomes of all non-URP work for both groups were compared to the outcomes of URP related work a difference is apparent. Approximately 40% of the studies planned during the 10-week URP program culminated in a paper being submitted to a professional conference within the following 9 months. Eighty percent of these papers were accepted for presentation. Thus, as anticipated, URP participants were involved in research activities at a more advanced level than is generally available to undergraduates and this was recognized at a professional level.

Perception of Research Skills

It was not possible to measure the effect of the program on actual research skills. Instead, students were asked about their *perception* of their research skills in five areas: doing a literature review, designing a research study, analyzing data using the computer, writing the results section of a paper, and writing the discussion section of a paper, and an additional question regarding their overall ability. To measure the change or improvement in these skills they evaluated their skills prior to the end of their junior year and at the end of their senior year. The questions were stated as follows: "At the end of your _________ year, how would you characterize your ability to __________? Would you say you: (1) were able to assume primary responsibility, (2) were nearly able to assume primary responsibility, or (3) would rather have someone else assume primary responsibility. On all measures the URP participants perceived that their skills improved more between their junior and senior years than did the nonparticipants, Wilk's lambda (1, 2, 16) = .558, $p < .002$.

Effect of URP Program on Career Choice

The most important effect of this intensive research experience was on the careers of these talented undergraduates. URP participants were more likely to choose a career in psychology than nonparticipants, X^2 (1) = 4.72, $p < .05$; and regardless of the actual career chosen, URP participants were more likely to choose a career in which research was the main activity (in contrast to teaching or being a practitioner/clinician), X^2 (1) = 6.04, $p < .05$. Although both URP participants and nonparticipants perceived their past research experiences as greatly influencing their career choice, URP participants attributed it to a specific research experience (the URP program), X^2 (1) = 7.28, $p < .01$. URP participants also made the attribution that their research experience (presumably the URP program) was extremely important in helping them get the career of their choice, X^2 = 11.58, $p < .05$.

To some extent the URP program may have actually helped them achieve their career goals. URP participants were accepted at and received financial aid from graduate schools which were rated higher in research productivity. However, they also applied to schools that were rated higher in research productivity. This combination of results indicates that the URP participants were accepted at graduate schools rated higher for research productivity because they initially chose to apply to these schools and nonpartcipants chose not to apply to these schools. It could be assumed that nonparticipants chose schools that may have been rated higher on a clinician/practitioner dimension and this would have been congruent with their career interests. This conclusion is also supported by the fact that these two groups of students did not differ significantly on important selection criteria (GPA and GRE scores) and in overall acceptance rates into graduate school.

Discussion

Teaching students how to conduct research must be tailored to the characteristics of the student. Graduate students are taught much differently than undergraduates. Similarly, not all undergraduates should be taught in the same manner. This paper summarizes a unique approach to teaching research to a special type of undergraduate student (highly talented) and summarizes some of the outcomes that can be gained from this approach.

This approach is unique because it provided an intensive experience (40 hours per week for 10 weeks) during which the students learned, developed, and used research skills that are not usually taught until graduate school. In addition, the educational experience included one-on-one collaboration with an expert on the research topic and a climate that emphasized high levels of achievement, peer support, and deadlines for specific tasks. This approach differs from typical undergraduate science education whether it be a laboratory course or independent research.

As a result of this experience undergraduate students were able to produce research products that were professional in quality when subjected to peer review at conferences and for publication in professional journals. Evidence was presented that the experience had a significant impact on the perception of their research capabilities. Also important is the finding that URP participants chose a research-oriented career more often than nonparticipants. Finally, participants also applied to and were accepted at graduate schools that have higher research productivity than nonparticipants.

However, providing an intense research opportunity and developing advanced research skills in undergraduate students is significantly more time consuming and expensive than using them as technicians. Is it important to teach and develop these research skills in students at the undergraduate level when it will occur in a couple of years at the graduate level? Because of the high costs there seems to be little justification for accelerating the educational process just to teach skills. However, the effect of an intense research training program on the career plans of talented undergraduates is extremely important and cannot be recouped at a later time. Based on less advanced research experiences many talented undergraduates decide not to pursue careers that involve research and they align themselves more exclusively with a practitioner/clinician model. The real problem with this decision is that it is uninformed. When talented students are given a fuller appreciation of the complete research process they are more likely to incorporate research into their career plans.

GRADUATE STUDENT ATTITUDES TOWARD FINANCE AS A FUNCTION OF CLASS SIZE

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The purpose of this study was to investigate differences in student attitudes toward finance as a function of class size. We tested whether student attitudes toward finance differed between a class of 25 students and a class of 50 students. At George Mason the "normal" class size is 25. The students were members of a basic M.B.A. Financial Management class. In both of the classes, the instructor, the textbook, the syllabus, and the examinations were the same. Additionally, no effort was made to assign any particular students to either class. In general, we found that students' attitudes toward finance as a subject, toward finance as a career, and toward the finance course in particular were positive in both classes, but were more positive in the small class than in the large class.

Increasing class size is one method for dealing with the problem of high student enrollment demand in the face of limited resources. Increasing the class size may necessitate changes in the curriculum, changes in choice of textbook, changes in methods of testing and grading, etc. While decisions on the above are clearly to be made by the faculty, the students are also interested parties. The response by students at the Harvard Law School over changes in grading methods bear testimony to this point.

Methodology

The data was gathered by the use of questionnaires (appendix) which were administered at both the beginning and the end of the semester. The responses were anonymous because the students were allowed to use a four-digit code of their choice. The use of two questionnaires allowed for looking at differences within the classes as well as between the classes.

The questionnaires had four parts. The first three parts, respectively, contained statements on finance as a subject, on finance as a career, and on the Financial Management course in particular. There were three statements in each of these parts to which the students were asked to respond as strongly agree, mildly agree, agree, mildly disagree, or strongly disagree. For the purposes of analysis, these responses were scored from values of 5 down to 1, respectively. The fourth part of the questionnaire was used to collect demographic data on the students. Attitude scores were calculated for each of the three parts and in total by respondent. The age, number of children, total credit hours, and number of credit hours were continuous variables while sex, marital status, employment, and major were included in the analysis as dummy variables. There were twenty usable responses in the small class and thirty-three in the large class. The usable responses in the large class reflect the fact that nine people dropped or withdrew versus no drops and one withdrawal in the small class.

Empirical Results and Analysis

The results and analysis are presented in three sections. In each of the three sections the attitude scores are examined by category and in total. The first section examines differences in the mean attitude scores, the second section examines the correlations between the attitude scores and the demographic variables, and the third section examines the relationship between the attitude scores and the demographic variables as estimated with a stepwise OLS linear regression.

The mean attitude scores in Table 1 indicate that students' attitudes were positive (mean greater than 3) toward finance in both the large and small classes. However, the attitude scores were higher in the small class than for the large class in all categories for both questionnaires. In the subject, course, and total scores, the lowest score for the small class is higher than the highest score for the large class.

The between-class score differences in Table 2 reinforce the conclusions drawn from Table 1. For the career, course, and total scores, the small class scores were greater than the large class scores and became ever greater by the end of the semester. The end of semester attitude score differences were all highly significant.

The within-class score differences (Table 1) were also interesting. Attitude scores for career, course, and total declined over the semester for both classes, but the declines were much greater in the large class than in the small class.

An examination of the correlations between the attitude scores and the demographic variables found that most of the variables were not significantly different from zero and therefore are not presented. Of interest, however, were the correlations between Finance majors and attitude scores. For Finance majors in both classes, there were significant positive correlations with attitude toward finance as a career, as expected. However, the correlations with attitude toward finance

Table 1.

Mean Attitude Scores by Class Size For The Beginning and End of Semester Questionnaires

	Large Class		Small Class	
	Beginning	End	Beginning	End
Finance as a subject	11.8 (3.9)	11.9 (4.0)	12.9 (4.3)	12.9 (4.3)
Finance as a career	11.5 (3.8)	9.3 (3.1)	11.9 (4.0)	10.5 (3.5)
The Finance course	11.1 (3.7)	10.6 (3.5)	11.8 (3.9)	11.7 (3.9)
Total attitude scores	34.4 (3.8)	31.8 (3.5)	36.6 (4.1)	35.1 (3.9)

Note: Numbers in parentheses represent average score per statement (on a range from 1 to 5)

Table 2.
Between-Class Difference in Mean Attitude Scores
(Small Class Scores Minus Large Class Scores)

	Beginning of Semester	End of Semester
Finance as a subject	1.1 (.07)	1.0 (.09)
Finance as a career	.4 (.28)	1.2 (.07)
The Finance course	.7 (.18)	1.1 (.08)
Total survey scores	2.2 (.12)	3.3 (.04)

Note: Level of significance in parentheses.

as a subject were not significantly different from zero. This is the first graduate-level finance course for these students, which could explain the zero beginning of semester correlation but not the zero end of semester correlation. They seemed to want a career in finance for reasons other than the subject matter.

The estimated relationship between the demographic variables and the attitude scores is shown in Table 3. These equations were chosen on the basis of the highest R^2 adjusted for degrees of freedom (R_A^2). Overall, the explanatory power of the small class equations was much greater than the large class equations, while seven of the eight equations were significant at the .10 level or greater. As to the signs of the individual coefficients, there was virtually no agreement between the two sets of equations. Those variables which were positive in one set were negative in the other or did not appear in the equation. As an example, in the large class the Finance major variable was positively related to subject and career attitude scores as expected, but in the small class the Finance major variable was negatively related to subject attitude scores and unrelated to career attitude scores. No clear picture of the relationship between attitude scores and the demographic variables was apparent to the writer.

Summary and Conclusions

The differences between the two classes in the mean attitude scores is reasonable evidence that increasing class size results in a less positive attitude toward the subject being taught, the choice of the subject field as a career, and toward the class itself. The correlation analysis indicated that Finance majors wanted a career in finance while not having a positive attitude toward the subject. This has nothing to do with class size but is an interesting contradiction. The regression analysis was statistically satisfying but extremely difficult to interpret. A decline in attitude scores toward a particular subject, career, or class is an opportunity cost that is difficult to quantify, but a cost nonetheless.

Table 3.

Estimated Relationship Between Attitude Scores and Demographic Variables

	Small Class				Large Class			
	Subject	Career	Class	Total	Subject	Career	Class	Total
Constant	15.22	2.05	17.63	37.34	16.75	18.01	11.30	44.99
Age	.01	.13	--	.05	--	--	- .14	--
Number of children	.51	--	.90	1.84	- .96	- 1.16	--	-2.82
Total credit hours	.09	.00*	.07	.16	- .04	- .04	--	- .13
Number of credit hours	--	.19	--	--	.29	- .30	.39	--
Male	--	--	- 6.11	--	--	--	1.93	2.75
Single	1.96	6.42	- 8.76	4.33	- 6.08	- 5.39	--	-11.25
Married	--	5.90	--	--	- 4.69	- 4.36	--	- 9.69
Employed	- 3.46	-1.47	--	- 6.37	--	--	--	--
Accounting	--	--	--	--	--	--	--	--
Management Science	- 3.92	--	- 1.44	- 7.07	--	--	--	--
Finance	- 3.05	--	- 2.30	- 5.21	1.96	2.55	--	3.78
Information Systems	- 3.30	-2.80	--	- 5.97	--	--	--	--
Management	- 2.52	.76	- 5.32	- 6.48	1.78	--	--	--
Marketing	--	--	1.80	2.62	--	--	--	--
Real Estate	--	-3.59	--	--	--	- 2.81	--	- 4.46
R^2_A	.60	.48	.56	.50	.24	.27	.13	.15
F	4.2	2.8	4.1	2.9	2.4	2.7	2.7	1.8
Significance	.02	.07	.02	.06	.05	.03	.07	.13

Note: * Insignificant in two places.

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APPENDIX
FINANCIAL MANAGEMENT QUESTIONNAIRE

IDENTIFICATION # ________________________________

This questionnaire is part of a research project designed to discover more about student's feelings with regard to the subjects they are studying. The aim of the research is to identify trends of thought based upon compilation of individual responses such as yours. Your candid, thoughtful reply will, therefore, be anonymous but important to the validity of the research findings. Please feel free to write comments on the back of this form. Thank you for your participation.

- -

For each of the statements below, indicate your degree of agreement or disagreement by using the following indicators:

Response	Indicator
Strongly agree	5
Mildly agree	4
Agree	3
Mildly disagree	2
Strongly disagree	1

	Indicator
A. Finance as a Subject	
1. Finance is an interesting subject to study.	________
2. Finance is an important part of my graduate course of study.	________
3. A knowledge of finance will be useful to me in my chosen career.	________
B. Finance as a Career	
1. Finance is an interesting career.	________
2. A knowledge of finance is necessary for most business careers.	________
3. Finance does not appeal to me as a career.	________
C. This course	
1. The grade I earn will reflect my performance in this course.	________
2. I think that there will be adequate opportunity to have my questions answered during class sessions.	________
3. I am confident about my chance for success in this course.	________

- -

BACKGROUND DATA

1. Sex (Male = 1, Female = 2) ________
2. Age ________
3. Marital Status (Single = 1, Married = 2, Other = 3) ________
4. Number of Children ________
5. Undergraduate Major ________
6. Total Number of Graduate credits earned to date ________
7. Number of credits, including this course, in which you are enrolled this semester ________
8. Currently employed (Yes = 1, No = 2) ________
9. Graduate Major planned (Accounting = 1, Management = 2, Finance = 3, Information Systems = 4, Management = 5, Marketing = 6, Real Estate = 7) ________

MEASUREMENT OF STUDY INVOLVEMENT

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INTRODUCTION

1. Education, especially higher education, is no longer restricted to the elite few, but is being made available to a larger population. The wider access to higher education has given rise to a number of problems regarding selection, admission, assessment, etc. The achievement of the student has been accepted as the major goal of an educational organization. The understanding and prediction of this achievement has become important not only from the point of view of the psychological well-being of the student, but also from the point of view of the organizational effectiveness in terms of stagnation and wastage.

2. Achievement is a function of several factors. It has now been recognized that achievement cannot be explained in terms of ability, aptitude or interest alone and that social and psychological variables also play an important role in accounting for the achievement. Social psychologists working in industrial settings have identified a numberof important variables affecting the performance of workers. They have identified that non-productive social phenomena like motivation, satisfaction, leadership style, organizational identification, etc., are some of the important factors to be taken into account in accounting for the performance.

3. Job involvement, defined by Lodahl & Kejner (1965) as "the degree to which a person is identified psychologically with his work or the importance of work in his total self-image", has been identified as a very significant factor in the satisfaction and performance of the workers. People differ as a function of their background and personal situation in the degree to which they are likely to become involved in their jobs. People who perceive that the job allows them control and a chance to use their abilities are likely to become more involved in their jobs than those who perceive these characteristics as lacking in their jobs. It has been shown that job-involvement is to a large extent an individual difference factor, that is not easily influenced by situational factors. In short, it can be

said that the job involvement is a function of both job holder's characteristics and the job characteristics.

STUDY INVOLVEMENT

4. Just as job involvement is a crucial factor in explaining performance and satisfaction, study involvement is important, as education occupies a major portion of the life of a student. Students talk of 'meaningfulness' or 'purposelessness' of education. Absence of values and relevance leads to a lack of purpose or direction in life. The opposite end of this state is the interest and involvement in education.

5. The sense of belongingness, acommitment to what one is doing and a feeling of satisfaction and accomplishment and the pride arising out of these feelings leads to meaningfulness and purpose in life. For a student, his willingness to identify himself with his institution and how far he will go to defend and support his institution constitutes involvement which makes education more relevant and potentially satisfying.

6. There is very little research reported on these aspects in educational settings. Borrowing heavily from the concepts clarified and empirical findings in industrial settings, a theoretical model (Indiresan, 1978) was developed to explain achievement in educational institution. This model identified the various input factors contributing to motivation and identification. It has been hypothesized that these factors lead to involvement which acts as a crucial moderating factor in accounting for achievement. The rationale is that once a student gets involved in his studies, he sets challenging work goals. The sense of success experienced in achieving these work goals leads to an increased self-concept which in turn gets the individual more involved and a cyclical relationship sets in. The output of this results in student achievement.

7. To test the validity of this model empirically, a study involvement inventory has been developed. This paper is a preliminary report on the development of this instrument.

Test Development

IDENTIFICATION OF DIMENSIONS

Involvement is considered as a function of aroused motivation and organizational identification. Aroused motivation is dimensionalised into:

(i) Motive to achieve (further divided into intrinsic value of achievement, social approval, expected rewards)

ii) Achievement incentive (difficulty of task, clear standards of excellence, feedback on performance)

(iii) Expectancy that effort will lead to achievement (previous experience, availability of resources, self-confidence)

Organizational identification was dimensionalised into:

(i) Perception of common goals and interests with peers and teachers

(ii) Sense of solidarity

(iii) Feelings of loyalty

ITEM SELECTION AND ITEM REDUCTION

Based mainly on instruments developed to measure job involvement (Lodahl and Kejner, 1965), organizational identification (Schneider et al 1968) and discussion with faculty and students, a pool of items were developed to measure the various dimensions identified in the theoretical construct. After clarifications and deletions, a seventy-five item questionnaire was constructed in a Likert format with a five point scale of response. The responses, strongly agree, agree, undecided, disagree and strongly disagree were scored from 5 to 1 and the scoring was reversed wherever the items were negatively worded.

This 75 item questionnaire was administered to a sample of 172 freshman students studying in various arts and science subjects in Delhi University.

The data from this 75 items were intercorrelated and factor analysed using the method of principal components analysis and the results were rotated using Kaisers (1958) varimax criterion. This yielded five psychologically meaningful scales which could be identified and labelled.

RELIABILITY

The split-half reliability of the scale corrected by Spearman-Brown formula was calculated to be .923, which is quite high and significant.

DESCRIPTION OF FACTORS

The present form of the questionnaire was able to identify only five meaningful scales. The items with loadings over .50 for these five factors are presented below:

Factor I

- 0.697 This school has a fine tradition of public service.

- .861 I feel a sense of pride in studying in this school.

- .581 I would advice any youngster to join this school.

- .680 If I had my life to live over again, I would still choose to study in this school.

- .721 I feel this school is doing an important job in showing how schools should be managed.

- .549 Generally speaking, my stay in this school has not been satisfactory.

- .760 The record of this school is an example of what a good school can achieve.

.506 If I hear (or read) any criticism about my school I would get very angry.

- .598 This school has a fine set of teachers.

All these items express a high degree of identification with the school. Hence, this factor was named "organizational identification". This factor accounts for the largest percentage of variance (7.869).

Factor II

- .670 I get the 'what is the use' feeling when I do not succeed in my studies.

- .715 I am very clear about my future career.

- .702 I am confident of my success in my studies.

- .462 When I fail in some study, I stop making further efforts.

.455 I feel that I am unfit for studies.

All these items refer to the personal feeling of the students regarding their own perception of their performance. This factor was identified as "self-confidence". This factor acounts for 4.661% of variance.

Factor III

- .786 Most things in life are more important than my studies.
- .517 The major satisfaction in my life comes from my studies.
- .733 I have other activities more important than my studies.
- .504 To me, my studies are only part of who I am.
- .626 I used to care about my studies, but now other things are more important tome.

These items refer to the importance attached by the students to their studies. This factor has been termed as 'involvement'. This factor acounts for the next highest percentage of variance, 4.557.

Factor IV

- .770 My teachers correct and check my work.
- .557 The teachers compliment when my work is outstanding.
- .670 If I make any mistake, I am corrected.

All these items refer to the information students get on their performance from their teachers. So, this factor has been called 'feedback' and accounts for 3.586 percentage of variance.

Factor V

- .808 I feel close to my classmates.
- .740 My classmates help each other when we need it.
- .773 I am satisfied with my relationship with my fellow students.

All these items refer to the perceived relationship with their fellow students. This factor has been called 'peer-relations' and accounts for 3.543% of variance.

These five scales identified in this preliminary analysis, gives a good representation of the various dimensions identified in the theoretical model. Some dimensions have not been brought out in this study. The questionnaire needs to be refined further by the addition of more items to bring out other relevant dimensions. The instrument needs to be tested on a larger and wider population to test its validity and reliability.

It is hoped that with further refinement of items and scales, this instrument will prove to be a useful tool to get an index of the study involvement of the student. This will help in identifying the profile of the alienated student and in counselling him to maximise his potential. Once a student can be got involved in his studies, it is expected that he will set difficult work goals. A sense of success achieved will enhance his self-concept, leading to further involvement, thus setting in a cyclical process. The outcome of this is expected to be the better achievement of the student.

. contd. ..

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THE PRELAW MAJOR: ADVISEMENT OR EDUCATION?

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In most colleges and universities the prelaw major offers little opportunity for undergraduate students to acquaint themselves with the substance or methodology of the law itself. Whereas preprofessional programs in the natural sciences and engineering, health studies, and even the liberal arts show considerable continuity between the undergraduate and graduate phases of education, the prelaw major is exceptional in providing almost no exposure to the subject-matter and pedagogy of American law. Actually, the designation, "prelaw major," is a misnomer: undergraduate students concentrate in one of the established departments; and even when a handful of ostensibly law-related courses are available, they never constitute a "major" in the conventional sense. Under such conditions, the prelaw program becomes mainly a matter of advisement: counselling students in course selection, arranging visits by law school admissions representatives, and publicizing information concerning the LSAT (Law School Admission Test). Students designated for administrative reasons as "prelaw majors" have no real academic identity in the undergraduate population, few opportunities to share common educational experiences, and little sense of the relevancy of their undergraduate coursework to their intended field of professional training. The consequence of this state of affairs is that the prelaw program is probably the most notable non-major in the undergraduate catalog.

This disconnection between the undergraduate prelaw major and graduate education in the law results from the frequently and vehemently stated position of law schools and legal educators as to what constitutes the best preparation for the study of the law. Law schools have been extremely reluctant to prescribe courses or curricula for admission. They have insisted that, because the practice of law is a "skill" or "art," the appropriate undergraduate preparation of law students should be a broad, liberal education emphasizing critical reading, analytical reasoning, and the mastery of written and oral communication. The Prelaw Handbook published by the Law School Admission Council, the self-styled "bible" of prelaw students, discountenances the very idea of a "prelaw major," which it describes as a "myth," disavows prelaw courses as "less rigorous" and "less effective" than conventional courses in the natural sciences, social sciences, and humanities, and counsells undergraduate students to pursue a "broadly based" education in any discipline which offers "training in analytical reading and writing."[1] It quotes from the 1953 "Statement on Prelegal Education" of the Association of American Law Schools that deemed the prescription of specific courses or curricula for admission to law school to be "unwise," approving in general terms, rather, the acquisition of such "skills" and "insights" as "comprehension and expression in words" (sic), "critical understanding of the human institutions and values with which the law deals," and "creative power in thinking."[2] Consistent with this view, the Law School Admission Council pamphlet, "Law as a Career," which circulates nationwide to prelaw majors and advisers, reminds students that "law schools have no requirements for a prelaw curriculum" and that, accordingly, "they should feel free to develop an educational program that is both broad and liberal in a classic sense."[3] Although the current edition of the Prelaw Handbook qualifies what it fears might be perceived as academic permissiveness by noting that not "just any, but many" courses of instruction purvey the skills and insights it applauds, nevertheless, it repeats its opposition to prescribed curricula and to what it assumes are inferior prelaw courses.[4] Consequently, efforts to rationalize a course-related prelaw major, with a substantive academic content, encounters the explicit rejection of such efforts by the law school establishment.

During the past few years, however, that crisis of conscience which sparked criticism of American education at all levels also prompted legal educators to review traditional attitudes toward prelaw education. In 1980 the Special Committee for the Study of Legal Education of the American Bar Association, under the chairmanship of Ronald J. Foulis, produced a lengthy report suggesting that, among other things, "the time may be ripe for the reformation of advisory statements on prelegal education."[5] Reacting to the generally perceived decline of undergraduate education--the abolishment or dilution of general education requirements, the deterioration of verbal and quantitative skills, and the fragmentation of the curriculum--the Foulis report concluded: "Certain perceived deficiencies may be more suitably remedied by prelegal than by legal education."[6] It stated that: "The possibilities for action include the recommendation of a particularized prelaw curriculum or of certain prelaw majors, limited but specific course recommendations, or at a minimum the dissemination of information about legal education and the legal profession that takes into account relevant recent research findings."[7] Further, it took "special note" of the efforts of another ABA committee, the Commission on Undergraduate Education in Law and the Humanities, to develop instructional materials for undergraduate legal studies; and, among its recommendations for the reform of both prelegal and legal education, advised that the Bar Association's group on legal education and admission to the bar and the Association of American Law Schools confer concerning the desirability of revising the 1953 AALS "Statement on Prelegal Education":[8]

> "In our view that statement should focus particularly on the need to master, at the undergraduate level, advanced writing skills and effective oral communication. We also believe that prelegal education could include courses that provide a basic understanding of accounting, economics, psychology, and of historical and contemporary social and political processes."

A start in this direction, it suggested, might be the initiation of a dialog between the faculties and administrations of law schools and their colleagues in the colleges and universities. Although its extensive critique of the 1953 AALS "Statement" did not wholly disavow the policy of opposition to prescribed curricula, the Foulis report did extol in great detail the value of such specific subjects as English, speech and languages, history, philosophy, logic, mathematics, legal decisions, economics, the social sciences, science and engineering, accounting, and computer science for acquiring those verbal and intellectual skills requisite for the successful study and practice of the law.[9]

The recommendations of the Foulis committee did not, however, elicit immediate or unqualified approval from the law schools. Introduced at the 1981 annual meeting of the Association of American Law Schools, it provoked resentment among legal educators as an intrusion into their special domain.[10] The AALS leadership, including Albert M. Sacks, president of the AALS and dean of the Harvard Law School, and John A. Bauman, executive director of the Association, expressed sympathy tempered with skepticism. In view of the reluctance of American law schools to prescribe specific academic requirements for admission and the ambivalence on the issue of a formal "prelaw major" within the Bar Association itself, the probability of a significant change in admissions policy was remote. The revised version of the Law School Admission Test for 1982 and subsequent years implicitly reinforced the expectation that candidates for admission would be broadly educated in programs stressing reading and logical analysis by eliminating the last vestiges of subject-matter testing.[11] The most positive result of the debate over prelegal education prompted by the Foulis report was the publication, under the auspices of the Commission on Undergraduate Education in Law and the Humanities, of a collection of teaching materials designed to integrate law into undergraduate courses in American history, literature, and philosophy.[12]

The debate continues. Two recent guest editorials in the prelaw adviser issue of the Law School Admission Bulletin explore the feasibility of using the advisement process to sensitize undergraduates to moral issues and to establish a prelaw core curriculum consisting of required lower-division courses in English prose composition, mathematics and geometry, logic, and structural reading.[13] The latter recommendation raises a complicating (and frustrating) practical consideration in discussions of how best to prepare undergraduates for admission to law school--the Law School Admission Test. Although the Prelaw Handbook, speaking on behalf of the Law School Admission Council, discounts the need for formal preparation for the LSAT, explaining that satisfactory performance on this examination could be anticipated from successful completion of an undergraduate program stressing heavy reading, essay-type examinations, and frequent term papers, it is far from certain that even the most rigorous and demanding undergraduate major transfers the kind of intellectual and comminication skills which legal educators insist are necessary for study of the law. Most undergraduate coursework tends to be content-oriented; and very few departments offer exposure to the distinctive genre of logical analysis and critical reading of multi-level texts composing the LSAT. Demoralized undergraduates are, consequently, reduced to dependence on the self-teaching exercises in the sample tests included in the "Prelaw Package" provided by the Law School Admission Services or else they become the clients of proprietary "cram schools". Certainly, no harm would come from offering a non-credit short course to upper-division undergraduates facing the trauma of the LSAT; but to make preparation for the entrance examination even a secondary objective of the prelaw major is to distort the purpose of undergraduate education and to quite miss the point concerning the true values of higher learning. The argument on behalf of a core curriculum for the prelaw major, stressing those skills which legal educators insist are necessary for the study and practice of their discipline, has, however, much to recommend it. If the prelaw major is to be taken seriously by students and faculty it must constitute more than advisement, no matter how conscientious and effective. Most colleges and universities possess sufficiently diverse course offerings (or their faculties are sufficiently ingenious to invent them) to provide undergraduates with exposure to the kinds of skills needed by law students. A core curriculum of lower-division courses in English composition, philosophy, public speaking, the social sciences, and the humanities or even special sections of survey courses in these subjects could easily be made available to prelaw students. There is also room for explicitly law-related courses in many undergraduate departments.[14] In America only in the past century and never elsewhere in the Western world has the study of law been wholly excluded from the liberal arts curriculum;[15] and there presently exists sufficient social scientific and humanistic scholarship to accomplish the integration of legal studies in the fields of anthropology, history, philosophy, health studies, and literature and language.[16] In conclusion, the original question might be repeated: "the prelaw major--advisement or education?" Surely, a convincing answer must take cognizance of the compelling duty of teachers, among the other responsibilities of their profession, to teach.

[1] *Prelaw Handbook, 1984-85*, Law School Admission Council Princeton, New Jersey, pp. 5, 16.

[2] *Ibid.*, p. 16. For the complete "Statement," see n. 5 below.

[3] "Law as a Career," Law School Admission Council, Princeton, New Jersey, an undated, unpaginated pamphlet.

[4] *Prelaw Handbook, 1984-85*, p. 5.

[5] *Law Schools and Professional Education: Report and Recommendations of the Special Committee for a Study of Legal Education of the American Bar Association*, Chicago, 1980, p. 22.

[6] *Ibid.*

[7] *Ibid.*

[8] *Ibid.*, p. 104. The 1953 AALS "Statement on Prelegal Education" is printed, pp. 111ff.

[9] *Ibid.*, pp. 115ff.

[10] "Law Students' Undergraduate Training Termed Inadequate," *Chronicle of Higher Education*, January 12, 1981, p. 7.

[11] See the publication of the Law School Admission Services, *Law School Admission Test, 1984-85*: Preparation Material/Sample Test.

[12] Commission on Undergraduate Education in Law and the Humanities of the American Bar Association, "Commission Reports" (a multilithed newsletter), April and September, 1980.

[13] *Law School Admission Bulletin*, Prelaw Adviser Issue, January and May, 1984. The guest columns are by Leif H. Carter, "Educational Goals in Prelaw Advising," and Robert E. Jones, "Suggestions for a Prelaw Core Curriculum," respectively.

[14] These remarks are based on the experience of the University of New Hampshire's Prelaw Advisory Committee and its Humanities Program in two elective courses in "Humanities and the Law" and "History and Law" during the academic year, 1981-82.

[15] Herbert L. Packer and Thomas Ehrlich, New Dimensions in Legal Education (New York, 1972), p. 59.

[16] See, among many such books, the works of E. P. Thompson, Whigs and Hunters (London, 1975) and A. Macfarlane, Witchcraft in Tudor and Stuart England (London, 1970) on the social history of crime; Max Gluckman, Politics, Law and Ritual in Tribal Society (Chicago, 1965) and A. Macfarlane, The Justice and the Mare's Ale (London, 1981) on the anthropology of law; Hannah Arendt, Eichmann in Jerusalem (New York, 1964) and Michel Foucault, Discipline and Punish, trans. A. Sheridan (New York, 1977) on law and human morality; and H. A. L. Hart The Concept of Law (Oxford, 1965), Law, Liberty, and Morality (Stanford, 1963) and Edward A. Hoebel, The Law of Primitive Man (Cambridge, 1967) on law and philosophy.

QUALITY CIRCLES - A LESSON FROM INDUSTRY: AN APPROACH TO STAFF TRAINING AND MANPOWER UTILIZATION

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INTRODUCTION

Quality of Worklife (QWL) is a label used to refer to an emerging body of literature about work. The QWL literature embodies a philosophy, a set of values and models, and a multitude of practices and techniques for understanding, explaining and effecting how work is organized and carried out.

The most important aspect of the QWL approach is the establishment of new cooperative diagnostic and problem solving bodies with, as Mills (1978) stresses, "The authority to make things happen" (p. 35). Such bodies are called by various names - quality circles, QWL Committees, problem solving task forces - what is important about them is their purpose and underlying rationale.

As Mills points out, these structures or circles provide opportunities for people to collectively identify barriers to the effectiveness of their work organization. Individual employees, through a unique method of problem solving, "tumble ... the barriers down" (p. 35). This approach is based on the conviction that a wealth of creativity and expertise exists within each organization and can be tapped through the process of quality circles. These problem solving bodies are organized ways of channeling expertise and putting it to work in the interest of the organization as well as the workers.

The New York Stock Exchange (1982) estimates that about 13 million workers are currently involved in a variety of QWL and productivity improvement programs. The Exchange has collected survey data showing that the most rapidly growing programs over the past two years were quality circles. Quality circles have been successful in the United States and other countries throughout the world as well. An estimated three million workers are involved in South Korea, Hong Kong, Taiwan, Singapore, and Brazil. Several Swedish companies have developed quality circles. Hughes Aircraft Company, Betchel, Lockheed, Ford Motor Company and many other U.S. companies have adopted, in one form or another, the quality circle concept. For the most part, quality circle programs in the U.S. have been confined to the production environment. In this environment, the benefits of programs - reduced product defects, worker absenteeism, tardiness, etc. - can be easily measured. Little has been done to apply quality circle concepts in the university setting.

Quality Circles in Education

Quality circles were developed in Japan as a method of increasing industrial productivity. In recent years, American businesses have begun to adapt this concept in order to improve employee communication and product quality. Although industry relies heavily on competition in production of material goods, and education is a "service" provider interested in goals of enrichment and success, they have the common problem of providing employees with a feeling of fulfillment in their jobs. English professors and spot-welders share many of the same needs. The obvious question in addressing these needs, however, is whether or not it is possible to translate a process designed for industry into a public education setting. The concept has been tried in higher education. For example, at Middlesex Community College in New Jersey quality circles techniques were used to provide an inexpensive approach to increasing productivity in the Advisement Center in order to help prepare student tutors for the employment environment (Cohen, 1983). A quality circle operating in the College of Business and Public Administration at the University of Missouri - Columbia consists of a professor and nine teaching assistants (Worley, 1984). The circle rejected a business management lab manual because it included inappropriate acitivites, was of poor design and extremely expensive. As an alternative the circle developed handouts, case studies, simulations and training materials for lab use. The plan was implemented during the 83-84 academic year; savings to students amounted to $18,000 - $20,000.

Quality Circles as a Human Resource Development Tool

In turning to quality circles as a human resource development tool, both Middlesex and UMC were sharing in the reciprocity of ideas about "people building" for productivity that has characterized Japanese industrial relations since World War II. The statistical methods used in quality circles as a method for improving quality control in industry is an American export, brought to Japan by engineer W. Edwards Demming in the 1950s (Fitzgerald and Murphy, 1982). This concept, which involves small group meetings of employees doing similar work who meet regularly to identify, analyze and solve product quality problems, was refined by Dr. Kaoru Ishikawa and his Japanese colleagues. One out of every eight Japanese employees is now involved in quality circles (Cohen, 1983). Membership in the circles is strictly voluntary. No one is required to participate and no one is kept out. Some of the objectives of the quality circle are to:

- Reduce errors and enhance quality
- Inspire more effective teamwork
- Promote job involvement
- Increase employee motivation
- Create a problem solving capability
- Build an attitude of "problem prevention"
- Improve company communications
- Develop harmonious manager/worker relationships
- Develop a greater safety awareness

A quality circle program is made up of four interrelated parts: The members themselves; circle leaders; the facilitator (program coordinator); and the steering committee. There is no limit to the number of circles in a given area, even if all the people in the area do the same work. As many circles are created as are needed to accommodate all those who want to join. Most circles meet for an hour each week, but this varies from organization to organization, according to need (Allen, 1984).

The theoretical foundation of the quality circle concept is that of employees have an opportunity to participate in the activity of an organization, they will have a greater sense of personal satisfaction in their jobs. Although the members of a circle have jurisdiction only over their own work site, they have the opportunity to solve problems which will impact not only circle members, but other employees and, by extension, the entire organization. The training, moreoever, focuses on teaching and using skills which can be effectively translated into arenas other than the job.

PROGRAM METHODOLOGY

Bureaucratic forms of organization and economic restraints have conspired to create levels of frustration among the employees of many colleges and universities. At Iowa State University the quality circle concept has been adapted and has recently expanded institution-wide. Circles have provided employees at all levels with a vehicle through which they can have input into institutional activity. In effect, through quality circles, Iowa State Univeristy has served as its own learning laboratory. Faculty, administrators, staff, and students have joined together to solve mutually identified problems. In its most classic sense, the whole is greater than the sum of the parts.

Pilot Phase

Circles were initiated at Iowa State University, on a pilot project basis in 1982. The project provided for the development of three circles: one involved white collar workers in the Purchasing Department, a second involved blue collar workers in the Physical Plant, and third involved clerical staff in the Engineering Extension Service.

Expansion

The year 1984 marked the beginning of the expansion of quality circles at the university. This commitment to expansion was supported by the recruitment and hiring of a training coordinator with the responsibility for synchronization of the quality circle program and formalizing the training. Additional circle leaders were trained and three additional circles have been started. The pilot project which was begun nearly two years earlier had proven quality circles useful in improving productivity, promoting active job involvement, improving quality, developing team attitude, and promoting personal development.

Problem Identification and Proposed Solutions

Numerous problems were identified by circles. Solutions were presented to management. Many were subsequently implemented, and include:

- Reduced number of days required to process a purchase requisition for equipment. This was developed through creation of a continuous routing form which improved turnaround from eight days to five days. In addition, the circle recommendation reduced by 50 percent the time a clerk spent handling such paperwork.
- Reviewed Purchasing mailing procedures. This resulted in a consolidation of mail formerly sent in separate envelopes to the same vendors e.g., general correspondence, expediting letters, requests for quotations, and purchase orders, etc. Further savings resulted from replacement and/or cancellation of certain computer terminals and typewriters after review by circle members.
- Revised product numbers used to identify goods and services being ordered through Purchasing. The number of

commodities included were expanded. This enhanced computerized reports, facilitated locating a desired quotation, provided faster access to vendors previously solicited, and increased uniformity in the product coding system.

- Provided "rover" custodians with extra building keys. This innovation eliminated the need for staff to return to a central office each time they required entrance into a locked room.

- Eliminated the need for tractor chains. Circle members conducted cost comparisons when fluids, in lieu of chains, were used in tractor tires for snow removal. A video presentation illustrating the improved traction was made to management.

- Acquired a modular communications system. Another circle confronted with a move to a different building elected to review available phone systems with a view towards efficiency. The circle was able to demonstrate through payback analysis that the system would be cost effective.

In addition to the examples above, many ideas resulting from circle brainstorming sessions have been implemented by management, without formal presentations. Safety improvements include lights on power grinders, rear-view mirrors installed in tractors, and leveling drains and manhole covers. Improved efficiency was realized through construction of storage bins for sand and gravel stockpiles which previously became mixed during loading operations; use of hand blowers for leaf collection; raising the bid limit for items requiring formal quotations; transferring phone requests for emergency purchase order numbers from purchasing agents to clerks; increasing utilization of a word processor in storing commonly used purchasing terms and conditions.

Impact

The impact on financial resources of the institution as a result of implementing these ideas exceeds $50,000. However, quantified dollar savings are only a small part of the true assessment of the program's effectiveness. Quality circles utilize techniques that are proven prerequisites for persons aspiring to be managers. Additionally, when surveyed, circle members evidenced strong commitment to their current positions; increased morale; and dedication to the University. Problem identification, problem solving, brainstorming, cause and effect relationships, data collection, use of Pareto charts, histograms, and effective audio/visual presentations to management provide invaluable training and experience for all circle members.

CONCLUSION

It costs money to save money - a reality fiscal administrators understand. Training associated with the successful implementation of circles requires funding. Audio visual materials and instructional booklets add costs. However, once initial training has been acquired, the process is self perpetuating. Organizations are then in the position to train new leaders, facilitators and members.

Quality circles have resulted in widespread participation of the total campus community. Faculty members have assumed the roles of planners and trainers in the circle process thus bridging the gap from theory to practice. Staff and administrators have joined circles to implement the participative management philosophy. Students, both graduate and undergraduate, have served as circle facilitators or resources to the ongoing problem exploration and solving process thereby adding a "real world" element to their college coursework.

RECOMMENDATIONS

The following recommendations developed as a result of the research reported in this study. They are not all inclusive, but are logical suggestions from the brief summary of the literature.

1. Case study research on quality circles in business is plentiful. Little research on quality circles in a higher education setting exists. It is necessary to encourage a vigorous effort to control research design to allow for:
    a. measurable population
    b. measurable and verifiable descriptions of design and intervention
    c. controls for randomization or equivalency of comparison groups
    d. careful consideration of relevant and objective evaluation criteria
2. Establish a researchers' and practitioners' clearinghouse for materials specific to quality circles in higher education.

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EDUCATIONAL TECHNIQUES AND TECHNOLOGIES IN FOREIGN LANGUAGE LEARNING: THE FUTURE IS NOW

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> True or False Many students dislike foreign language (FL) courses?
>
> True or False The main reason students dislike FL courses is that they don't do much in such courses except fill out worksheets, cram for weekly even daily tests, and listen to teachers talk?
>
> True or False Many more students would enjoy foreign language learning if they were actively encouraged to construct things, act things out, and do projects?

If you agreed with each of the three statements, you, the National Commission on Excellence--along with the major education reports--, and John I. Goodlad (*A Place Called School*) are concerned with *the* major and most difficult problem in FL education: as is true with most academic education, foreign language learning tends to be too abstract.

Concern is easy enough. What is not so easy is coming up with sensible FL teaching and learning strategies that use active, concrete experiences to help students learn foreign languages.

The purpose of this presentation is two-fold: first, to look at three FL teaching strategies--detailed narration (DN) in beginning courses, directed practice (DP) in intermediate courses, and active participation (AP) in advanced courses; and secondly, to examine the role of technology in these strategies.

Before we consider the role of technology, let us examine some of the major aspects of each strategy. Furthermore, let us define *strategy* as technique, means or mode by which or through which an objective is reached.

The objective central to the first strategy--detailed narration--is the primacy of creating in the learner a seminal linguistic system, namely the target language (TL) grammar, and to reach this objective at the end of beginning courses. As D.A. Wilkins states in his Notional Syllabuses, "What we can express through language still depends...on how far we have mastered the grammatical rules that underlie the production of utterances."[1] Or as Chomsky has told us--grammar provides the finite means to create an infinity of sentences.

Agreeing with Wilkins and Chomsky leads us to conclude that learners should not be expected to speak before they have acquired a sufficient base. As Stephen Krashen puts it in his Principles and Practices in Second Language Acquisition--, speaking a TL follows a period of assimilation, and to force learners to speak before they have developed a grammatical base is detrimental to communicative mastery of the TL. Following this line of thought, we can easily come to the conclusion that the primary objective of beginning FL instruction should be the formation of the TL grammar. Consequently, any approach used by FL teachers should help learners build the TL grammar.

As a teaching strategy in beginning courses, DN works because at its core is the concept of narration. In the Paideia Proposal, Mortimer Adler--in behalf of the Paideia Group--states that when what is to be learned is basic knowledge--syntax, grammar--"...the mode of instruction is didactic or teaching by telling and demonstrating."[2] Today, given the existing and emerging technologies, as FL teachers we can turn our telling and demonstrating into something other than just standing in front of the class, text in hand, lecturing and dispensing knowledge.

In the second part of this presentation, we will examine the role of technology in DN, but for now, let us turn our attention to the second strategy.

namely directed practice (DP) in intermediate levels of FL instruction.

Central to DP is the primacy of speaking the TL. Hence, this strategy is effective only with teaching approaches that stress speaking practice. DP as a teaching strategy helps learners speak because at its core is the concept of coaching. In the *Paideia Proposal*, Mortimer Adler reminds us that when what is to be learned is skill in performance, "...the mode of teaching...must be akin to the coaching done to impart athletic skill."[3]

Coaching akin to that which is done to impart athletic skill is, perhaps, the most difficult kind of teaching. It is the essence of DP because research supports the contention that learners learn skills more easily and effectively when they are shown instead of merely being told.

The objective of DP is to help learners think and speak in the TL and have it function for them as does their native language. In the second part of this presentation, we will examine the role of technology in helping FL teachers become successful speaking coaches, but for now, let us turn to the third and last strategy, active participation (AP).

At the core of AP is the concept of cultural participation beyond just speaking the TL. As a strategy, AP is effective with extremely advanced learners who have a sound grammatical base, and whose speaking performance is near-native. Unfortunately, as Mortimer Adler asserts in the *Paideia Proposal*, active participation is a mode that has rarely been attempted and is largely innovative. Speaking for the Paideia Group, he points out: "...the appropriate mode of instruction...is neither didactic nor coaching. It cannot be teaching by telling and by using textbooks. It cannot consist of supervising activities involved in acquiring skill...it must be...the mode of teaching which helps students bring ideas to birth...raising their minds up from a state of understanding and appreciating less to a state of understanding and appreciating more."[4] In short, it is teaching that guides learners who have mastered the grammer, acquired near-native fluency, and for whom the TL functions as does their native tongue; it is teaching that guides learners to learn by doing-observing-analyzing.

At the core of AP is the kind of participation involved in role playing and acting things out. Loren Alexander in "Progressing from Imitative to Creative Exercises...," states: "Acting out...is the hallmark of true automatization of...language: phonological, morphological, and lexical..."[5]

Although technology can be used dramatically in each of the three strategies we have discussed, whether or not it will be used depends on three crucial realities: 1) First, and foremost, the role of technology in education in general and FL education in particular depends primarily on how teachers see their function in the classroom.

Among its 28 recommendations, the New York Institute of Technology (Report on Educational Technology) makes the following appeal: "Teachers must be convinced of the importance of their new roles as information managers, rather than the traditional role as dispensers of information. Until teachers recognize and accept this change, there can be no wide-spread impact of technology on...learning experiences."[6] As director of an electronic language learning center and a teacher, I know that teachers generally are not convinced that technology can significantly improve FL learning. Instead, they tend to see it as just something else in addition to everything else. Even those who occasionally use technology view it as an aid, a supplement, and yes, nice, perhaps, but certainly not necessary.

2) The second reality we must keep in mind is that no technology is a

cure-all or a panacea for everything that is wrong with education. Technologies, in and of themselves, are not teachers. When properly integrated into the curriculum or learning package, they can dispense information more effectively, efficiently, and dramatically than any army of teachers, but they will never inspire, convince or motivate the learner to understand why he should motivate himself to learn. Inspiring learners to motivate themselves to search out and seek after knowledge, to guide them to learning resources, to help them diagnose their strengths and weaknesses--this is the art of teaching. This is what we in the classroom should be about. Let's leave the dispensing of information to machines--this, and only this, is what they do best.

3) The final reality we must keep in mind is that if technology is going to significantly improve FL education, then we must have it carry the main instructional load--instead of an ancillary one--and teachers must manage, guide, and participate in the flow of information instead of being the source of it.

If technology is to carry the main instructional load, how do we go about designing our educational strategies in such a way that technology is basic?

Whether or not we use DM, DP, AP or any one of hundreds of other strategies, does not really matter. What matters is that we begin with an overall systematic method of instructional design that incorporates technology as an integral part of the design. Most instructional models lack this technology-as-integral step, and therefore, do not base the use of media on which medium does what best, how and when in relationship to other media being used and instructional objective to be reached. An overall systematic model of instructional design that includes technology-as-integral is the Parker Instructional Design Model.

As a model, the Parker incorporates technology in three dimensions: 1) selecting the proper medium for the needed learning objective; 2) utilizing the media selected; and 3) interrelating each technology or medium to each other. It is not the purpose of this presentation to examine the Parker model, except to point out that if technology is to carry the main instructional load, our instructional design process must lead to and from technology.

To illustrate possible ways in which technology can carry the instructional load in the first strategy we discussed--DN--let us begin by broadly defining technology as any and all things useful for the instruction of the learner: print media, audio-oral communications, actual objects, and the existing and emerging information technologies such as television, film, video, videodisc, interactive video, computers, computer-assisted instruction, etc.

Perhaps, there is not a school in existence that has all the technologies available; undoubtedly, there are some schools that have most of them, and some that have very few of them. The point is that as FL teachers we must make certain that the technologies to which we do have access carry the main instructional load.

With the Parker Model of Instructional Design as our overall systematic guide, let us use DN, but let us not carry the burden of telling and lecturing, but instead, let us devise a technology-mix which will free us to guide and facilitate, to inspire and motivate our students to learn the TL they have chosen. For example, in order to build the (French) TL grammar, we know that students need to recognize French verb families and their present affirmative endings. To help students reach the objective of correctly combining specific verb families and their present affirmative endings, DN strategy could take the form of frame games[7] (using computers or paper-and-print media). We could, if we have access to it, select for drill and practice Plato's[8] computer-assisted verb drills. Or we could devise audio-visual training modules[9] using slides, audio-tapes, and workbook drills. In short, we could use any innovative technology mixes that would provide students with the necessary information to build the TL grammar. The specific technologies we use and how we use them in DN depend on the specific needs of our students, the specific instructional objectives, and our own creativity. Unless we allow technology to function as dispenser of information and we serve as facilitators and guides to the student, we really don't need technology at all.

In the second of our strategies, DP or coaching, not only can technology carry the main instructional load, but it can also relieve the load on our vocal chords. To help FL teachers become successful speaking coaches, the emerging interactive videodisc technologies[10] can be of great help in providing students with opportunities to practice speaking the TL. Already being used successfully in the military services[11] and the medical professions,[12] interactive video is on its way to becoming an effective "coaching" technology.

Videodisc technologies are not the only ones that can help FL teachers coach TL speaking skills. Today, in language laboratories all over the country we have excellent audio-tape programs that provide countless exercises for the practice of speaking and listening comprehension. At some schools, FL teachers produce their own audio cassette programs--tailored to meet their students' needs. Shortwave radio broadcasts, the emerging satellite feeds from foreign countries, films, videotapes, records, guest speakers--all can be used by FL teachers to coach speaking skills. Relieved of being the main source of TL speech, the FL teacher can concentrate on individual student needs and design the best technology mixes to help each student acquire the TL fluency he or she is capable of reaching.

Since role playing is at the core of the last of the three strategies discussed, let us look at the role of technology in AP by keeping in mind that role playing involves observing-analyzing-doing. The technologies that can be of particular value in this strategy are the family of video and teleconferencing technologies.

Given our students' needs and the instructional objectives we have in mind, an AP in the form of a tele-interview might be an effective way to carry the instructional load. If we can afford it, it could be in the form of a video conference; a less expensive version would be a pre-arranged audio phone hook-up between classroom and TL resource person. For example, we could have our students actively research a guest speaker--say the Ambassador of West Germany--and interact with the speaker via teleconference. We could also use the AP strategy in the form of oral case studies and rolemaps--opportunities for students to actively develop, videotape, and analyze aspects of the TL culture.

The educational techniques--such as DN, DP, and AP, not to mention others--stand ready to serve FL teachers in their teaching and FL students in their learning. The educational technologies--from print to electronic, from telephone to satellite--stand ready to carry the main instructional load. Yet, in over 90% of the Western Hemisphere's classrooms, teachers carry the main instructional load and serve as the source of information and knowledge, standing before their classes lecturing. Not until teachers allow technology to carry the burden of the information load will there be any wide-spread impact on learning. Not until teachers turn from being dispensers of knowledge to becoming dispensers of inspiration will technology be the bedrock on which we stand and help our students discover what it means to be a member of the family of man.

Notes

[1] D. A. Wilkins, *Notional Syllabuses* (Oxford: Oxford University Press, 1976).

[2-4] Mortimer Adler, *The Paideia Proposal* (New York: Macmillan Publishing Co., Inc., 1982).

[5] Loren Alexander and W. Butakamm, "Progressing from Imitative Exercises...," *British Journal of Language Teaching*, 21(1983) p. 27.

[6] Ludwig Braun, "Report on Educational Technology," *Journal of Educational Technology Systems*, 12(1983-84).

[7] There are numerous sources for frame games suitable for instructional applications. Some of the more helpful ones include the following: *The Way We Play* published by the Diagram Group, (New York: Paddington Press, Ltd., 1975); A. Davison and P. Gordon's *Games and Simulations in Action* (London: The Woburn Press, 1976); A. Omaggio, *Games and Simulations in the Foreign Language Classroom* (Arlington, VA: Center for Applied Linguistics/ERIC Clearing House on Languages and Linguistics, 1981); Claire J. Kramsch, *Language in Education--Theory and Practice, No. 37* (Arlington, VA: Center for Applied Linguistics/ERIC Clearing House on Languages and Linguistics, 1981); R. Hour, *The Guide to Simulations/Games for Education and Training* (Cranford, NJ: Didactic Systems, 1976); and, J.W. Pfeifer and S. Warner's *Gambits 1-3: A Course for Teaching English to Adult Francophones in the Public Service of Canada* (Ottawa: Public Service Commission, 1983).

[8] For the latest information about PLATO offerings (some now available to run on personal computers) contact: Control Data Corp., P.O. Box 0, Minneapolis, Minnesota 55440. Also of interest is Dr. Mark W. Seng's computer search list of CAI instruction in the field of foreign language education. The list, which has almost 100 titles, is available from: Mark W. Seng, Associate Professor of Curriculum and Instruction, University of Texas-Austin, Austin, Texas.

[9] H.D. Stolovitch, "How to Produce Audio-visual Training Modules," NSPI Journal, May 1976, p. 26.

[10] For an excellent, anecdotal discussion of videodisc technology applicable to foreign language education, please see Larrie E. Gale's "Montevidisco: An Anecdotal History of an Interactive Videodisc," CALICO Journal, June 1983, pp. 42-46. Of further interest is John and Joseph Gindele's "Interactive Videodisc Technology and its Implications for Education," T.H.E. Journal, 12(1984), p. 93.

[11] James E. Schroeder, "A Pedagogical Mode of Instruction for Interactive Videodisc," Journal of Educational Technology Systems, 12(1983-84), p. 48.

[12] Thompson Manning, et al, "Student Acceptance of Videodisk-Based Programs for Paramedical Training," T.H.E. Journal, 11(1983), p. 105.

TRENDS IN GRADUATE RECORD EXAMINATION SCORES AS A MEASURE OF CHANGES IN QUALITY OF UNDERGRADUATE STUDENTS: A 15 YEAR STUDY

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Although the quality of undergraduate university education is a perennial issue, the topic has recently received increased attention as a consequence of financial and political pressures (Bovey, 1984). Terms such as "undermined", "eroded" and "ruin" are increasingly applied to the quality of undergraduate programs (Bercuson, Bothwell, and Granatstein, 1984). What are the facts?

They are difficult to come by. Part of the problem lies in the requirements of the procedure. Data collection in longitudinal studies takes years and, in a very real sense, is never complete. Furthermore, analysis of time series data is typically done using so-called "quasi-experimental" methods which do not establish causal relationships (Cook and Campbell, 1979). Despite these difficulties it is possible to address some of the specific questions that have been raised about undergraduate university education.

It has been suggested, for example, that the combined impact of decreased faculty and increased student numbers has eroded the quality of undergraduate teaching and seriously compromised achievement levels of graduating honours students. Further, it is accepted by some that inflation of grades has been a continuous trend at the undergraduate level and has seriously undermined the quality of students applying to and accepted by graduate and professional schools. What empirical data support these notions?

Records kept by the Department of Psychology at the University of Windsor would appear to provide an excellent opportunity to determine if the above assertions are true. First, although stable before 1978, from that year until 1984, departmental faculty did decline in number for six consecutive years reaching a minimum in 1984 (see Figure 1). At the same time, undergraduate enrolment, as shown by incoming introductory students, fluctuated considerably during this period. When faculty and enrolment are plotted on the same graph, two enrolment peaks rise above the faculty curve (see Figure 2). If there is any consequence resulting from the high number of students and the low number of faculty available to teach them, one would expect the students who entered around 1975 or 1976 and especially after 1980 to be at risk. But how can we determine if this is so?

Students entering the undergraduate program typically graduate, if they are in the honours program, four years after entering. The impact of a high student/faculty ratio would be expected to result in reduced student quality of honours students graduating around 1979 or 1980 and again after 1984. But how might quality be defined? Fortunately, Graduate Record Examination (GRE) scores of graduating honours students in our department have been recorded each year from 1970 to the present. Examination of these GRE scores reveal no indication that increased student enrolment, in combination with reduced faculty, lower student scores (see Figure 3). In fact, exactly the opposite seems to happen!

As indicated above, it has also been proposed that grade inflation at the undergraduate level has lead to a deterioration in the quality of students accepted into graduate and professional schools. As we have seen, there is no decrease in the quality of graduating honours students over the years, but the question of quality of those who apply to graduate programs may be asked separately. Are any longitudinal trends obvious here? Two sources of data, available in our departmental records, are relevant to this question.

First, examination of GRE scores of students graduating from our undergraduate program over the years who have also been accepted into graduate programs elsewhere should reveal shifts in quality if they exist. Examination of these scores, however, reveals only a slight increase in recent years. Second, examination of GRE scores of students from other undergraduate programs accepted into our graduate program since 1970 should show change in quality of students if there is a trend. Figure 4 does show a gradual change but, rather than declining, GRE scores of these students have gradually increased over the past 15 years.

The evaluation of quality of undergraduate education is an excellent exercise in manifest and hidden agendas. In principle we are all for high quality in professors, in education and in students. The rhetoric becomes especially lively when financial and political variables are added and mixed. The retrospective study presented here has addressed only two of many questions that have recently been raised concerning the quality of undergraduate education. For the purpose of this paper I have used the Graduate Record Examination (GRE) as an index of student quality. Those familiar with the GRE scores are fully aware of the difficulties associated with their interpretation. We use them because they seem relevant and, as in this study, they are the only standard measure available.

Ten years ago Dawes (1975) reviewed the value of criteria typically used in North America for evaluating undergraduate students for acceptance into graduate programs and, perhaps like Gödel (1962) in another context, concluded that we simply cannot solve the problem of whether these measures (which include the GRE) are valid or not. I know of no study published since that has concluded differently. What, then, are we to do?

In the absence of conclusive criteria we use the measures that we have in the most rational way possible. Hence, GRE scores will continued to be used, by me and by others, as an index of student quality until it can be shown that these scores actually have no relevance. Accepting this pragmatic though not ideal strategy, what can we say about the issue of progressive "erosion" in undergraduate student quality and its effect on graduate schools? Data collected in our department do not support these assertions. If there is any trend it appears to be a positive one. That is, as measured by the only standardized score available, recent students score somewhat better than previous ones and not worse.

A serious problem raised by these data is that they provide no rational argument for increased support to provide faculty to teach undergraduate students. Judging from these data, reduced faculty in the presence of increased enrolment is consistent with unchanged or even increased student quality. For federal or provincial funding sources this is a delightful finding; they can now spend their money elsewhere. However, for the universities, who have been insisting for years that underfunding leads to a ruinous decline in the quality of education, these data are hardly reassuring.

In conclusion, I should point out that these findings were anticipated some years ago. I quote Steven Leacock on the funding of a university:

> I would found first a smoking room: then when I had a little more money in hand I would found a dormitory: then, after that...a decent reading room and library. If I still had money left over that I couldn't use, I would hire a professor and get some books.

We all thought he was just trying to be funny.

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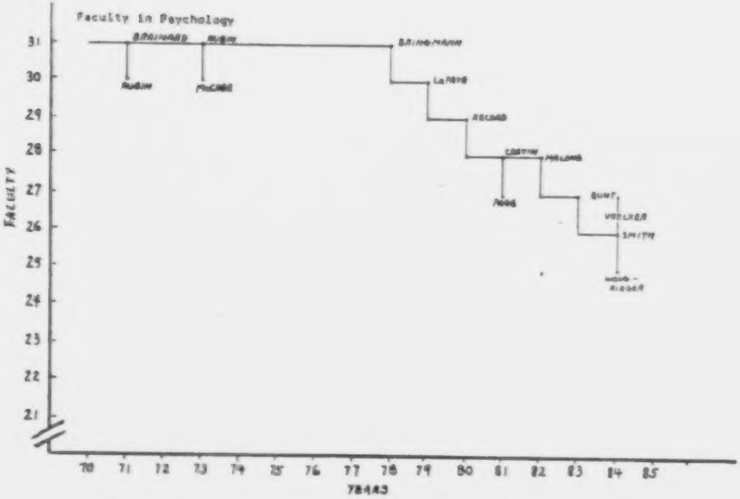

Figure 1. Faculty decline from 1978 to 1984.

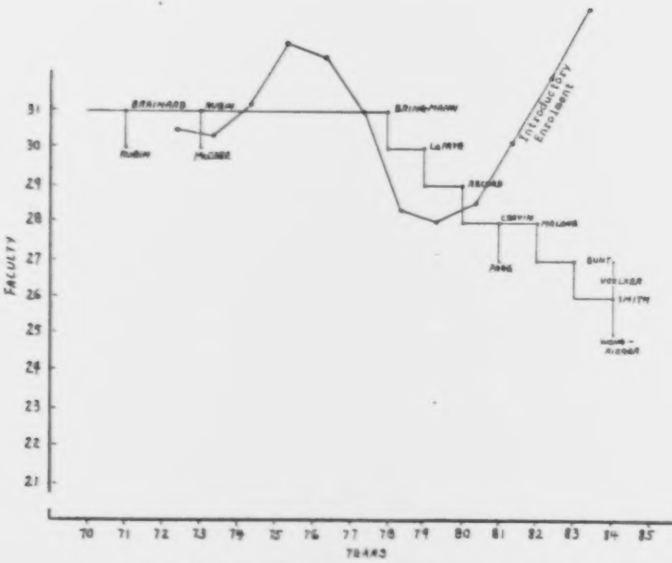

Figure 2. Undergraduate enrolment superimposed on faculty available to teach them.

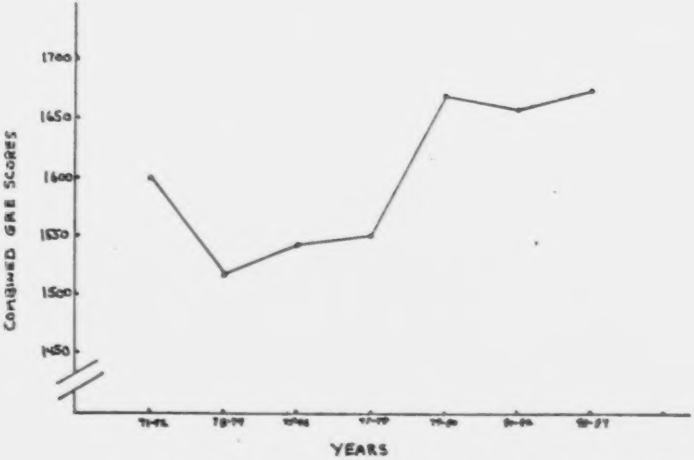

Figure 3. Combined GRE scores of graduating Honours students.

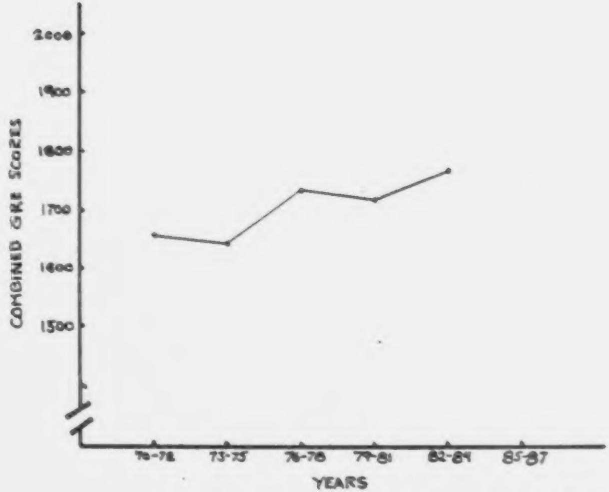

Figure 4. Combined GRE scores of first year graduate students.

THE DEAN FOR UNDERGRADUATE STUDIES: AN AMERICAN PHENOMENON

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The organized and publicly visible student protests of the late 1960's and early '70's gave rise in the United States to a variety of new academic practices and institutions, some of which have disappeared and others of which have had considerable staying power. Experimental colleges within larger universities are nearly all now gone or substantially modified toward the norm. Of the forms of grading alternative to the A-F system talked about and sometimes really tried--pass-fail, credit-no credit, descriptive grading or no evaluation at all--only "pass-fail" was broadly adopted and continues in general though remarkably infrequent use.

The various forms of experiential learning, cooperative education, internships and "field work," volunteer activities, have grown in strength over the ensuing decade and now seem to be a permanent part of the American academic scene. So do greatly expanded independent study and self-designed individual student majors.

This partial list of educational reforms reflects the major demands of '60's and '70's undergraduates and their administrative and faculty allies for greater "relevance" (Remember that shibboleth?) in academic studies and more control over their own education. Students, both individually and collectively, were to have a major--if not the major--role in deciding what was important.

The most notable administrative manifestation of the spirit of the time was the creation of a high level administrative office charged with particular responsibility for the academic concerns of undergraduate students. The office usually appeared at graduate study and research oriented public universities, since it was at those institutions that undergraduate students were most likely to feel neglected by a faculty whose professional rewards were seldom gained by teaching, advising or working individually with them. Liberal arts colleges and private universities, generally more focused on strong undergraduate education, were criticized for excessive curricular control and rigidity, but not generally for neglect of undergraduate students. Columbia and Harvard are, of course, notable exceptions as private universities that felt the full force of both the criticism and the active protest.

More typical of the pattern were such hot spots of student activism as the University of California at Berkeley, the State University of New York at Buffalo, the University of Maryland and San Francisco State University, all of which chose to create an administrative office charged with looking after the academic concerns of undergraduate students. The administrator charged with these general responsibilities was given a variety of titles and differing degrees of line or staff authority. Nearly always, however, he or she reported to the chief academic officer and had the phrase "undergraduate studies" in the title. The most frequently used title was Dean for Undergradute Studies, but Assistant or Associate Vice-President (or Vice-Chancellor or Provost) were also used, reflecting less independent authority but a closer association with the main-line academic structure.

Most of these offices have persisted, though some have disappeared. In some cases they have shifted from line to staff positions. Some institutions, perceiving advantages in such a position entirely apart from the response to conditions creating student pressure, have created the position in more recent years, so that there are now perhaps fifty people, at institutions large and small, with a similar title and portfolio. They are, however, so widely scattered and so focussed on their own institutions that there is no reasonably complete list of deans for undergraduate studies. Thus the deans do not even know each other very well.

As generally conceptualized, the position "Dean for Undergraduate Studies" is analogous to the "Dean for Graduate Studies," an officer of long standing in American universities. Like the graduate dean, the undergraduate dean carries on functions that serve all students and is not dean of a faculty such Engineering or Agriculture or Medicine. As the distinction is made at the University of Maryland, he or she is an "administrative dean," responsible for a group of academic programs and services, but not for the offering of courses or the hiring, promotion and tenure of faculty. However, where the graduate dean is likely to head a School of Graduate Studies through which all master's and doctoral degrees are awarded, undergraduate deans with few exceptions award only a small number of degrees in general or interdisciplinary areas. Neither do departmental faculty hold membership in an "undergraduate faculty" as many do in a faculty of graduate studies. Except for those cases in which a set of general education courses is offered under the auspicies of the undergraduate dean, no faculty members are subject to that officer's authority.

Stated in the most general terms, the responsibilities of the Dean for Undergraduate Studies include those academic programs and services for undergraduate students that are campus-wide in scope. This definition of function differentiates the Dean for Undergraduate Studies from the Dean or Vice-President for Student Affairs in that the functions of the former are for the most part clearly academic and do not involve such matters as student club and social activities, psychological services, or discipline. Nearly all deans for undergraduate studies do, however, include in their portfolio one or two activities that might be included in student services in the absence of an undergraduate dean's office, but which the academic arm of the institution wishes to bring into closer alignment with instructional activities. Thus such offices as admissions, registration, orientation and career counseling and placement appear on the agenda of one or more undergraduate deans.

Despite considerable local variance, the common core of activities that defines the role of the Dean for Undergraduate Studies includes general education; the advising of undecided students or students in their first year or two of university study; broadly interdisciplinary studies or majors that allow students to draw courses from any field of study; and instructional improvement activities, particularly those involving innovative teaching modes and structures.

These activities have a number of common characteristics in addition to being "academic programs and services for undergraduate students that are campus-wide in scope." All of them involve attention to the coherence of the student's entire education as opposed to education within a discipline. Thoughtful attention to these tasks quickly leads to questions about the general purposes of undergraduate education, clarity of goals for both teacher and student, student intellectual growth, the identification and meeting of individual academic goals, and students' responsibility for their own education.

These are issues that too infrequently arise in the design and conduct of specialized education in a profession or disciplinary major. Here the emphasis is likely to be on faculty-determined goals and coherence, specific educational requirements for all students, and the established cannon and standards of the field of study. The undergraduate dean's central concerns are likely to differ from those of college and departmental colleagues on such basic considerations as generalization-specialization, individual goals-disciplinary norms, intellectual growth-subject matter mastery, and the role of the student as apprentice or consumer.

Given this set of basic conceptual differences that arise from the activities characteristically assigned to the Dean for Undergraduate Studies, it is not surprising to note that the focus of the dean's attention is precisely those activities likely to get the least attention from the mainstream academic structure of the university: teaching, advising, general education. Thus the Dean for Undergraduate Studies lives in a continuous state of tension--creative tension, one hopes--with departments and colleges, insisting that they pay attention to those matters about which most university faculty care the least and which earns them the least prestige and reward.

The undergraduate dean's promotion and management of general education illustrates this tension well. General education is a phenomenon peculiar to American colleges and universities. It is founded on the idea that a well-educated person should have academic experiences that lead to breadth of knowledge and understanding as well as the deeper acquaintance with a particular field of study that the major field of concentration provides. The most common current practice defines breadth of knowledge as some experience with the different ways of viewing the world that are represented by the sciences, the social sciences, the humanities and, in some programs, the arts. General education also aims to assure a firm grounding in such basic skills as written and spoken English, mathematics, computers and foreign language. A number of programs will emphasize the development of sensitivities to and awareness of such matters as minority cultures, non-western cultures, the world community, technology or the dangers of nuclear holocaust. The entire program--in some cases specifically designed courses--is expected to develop skills of critical analysis and lead students to a relativistic understanding of their experience.

Whether students should come to the university without these skills and awarenesses, whether the courses are designed to accomplish the goals of the general education program, or whether a collection of courses that generally constitute between a fourth and a third of the student's program can begin to achieve the desired outcomes are all open to question. The undergraduate dean has the responsibility to insist that the goals of general education are important and that faculty need to teach with an operational awareness of the general education goals of the course and a sense that these goals are at least as important as the subject matter content itself.

Consider the obstacles to getting such a response from the generality of faculty at a public university that emphasizes graduate study and research. Departments, with limited resources, have to decide how to deploy faculty in order to meet all their instructional obligations. They have to offer several introductory courses to satisfy the needs of students majoring in the department, of those non-majors who need work in the department to fulfill a requirement of another major, and those who wish to take a course to meet general education requirements or simply out of interest. They must offer a full range of courses for majors, an appropriate selection of more advanced courses and seminars for graduate students in a variety of sub-specialties and provide supervision for master's theses and doctoral dissertations. Faculty cannot be overburdened with large numbers of students or courses, since they must have time for research and scholarship.

The great majority of faculty prefer to teach courses for graduate students and advanced undergraduate majors. They can teach material in the subspecialties in which they are most interested, the students are better or at least better informed, and the classes are smaller. The introductory courses tend to be very large, 150-500 students, both because there are a lot of students who need or want the courses and because teaching the introductory courses in large classes makes it possible to husband resources to meet the department's other teaching responsibilities. Those responsibilities are understood to be much more central to the department's mission than teaching freshmen and sophomores and other sorts of non-major riff-raff.

Unfortunately, it is these large introductory courses that at most public universities constitute the bulk of the general education offerings. It is not size itself that limits the general education value of these courses, but rather the limits that size imposes. Consider the fact that university faculty are, as a result both of self-selection for the role and the institutional selection process of tenure, oriented toward the generation of new knowledge. In the classroom, they are interested in student learning of a body of factual knowledge and comprehension of theory. They are on the whole less interested in what one might call "understanding," comprehension and the ability to think critically about social, ethical and epistemological issues that arise from the study of any subject matter.

The faculty themselves are not people who fail to think critically about the implications of their knowledge, but they are much less likely than the faculty of a small liberal arts college to have such goals for their students. The lecture format of large undergraduate courses as well as faculty predilection suggests organizing the course in terms of a body of fact and theory. Testing is almost inevitably of the short-answer, machine-graded variety, simply because the burden of grading essays for so many students is overwhelming, even with graduate student assistance. Thus the tests emphasize mastery of facts and students leave the course with a sense that the facts themselves are what matters.

It is this tendency of both faculty style and institutional logistics to emphasize knowledge over understanding that makes it so difficult for the Dean for Undergraduate Studies to bring to fruition a general education program that reflects the goals of a coherent liberal education. The Dean operates across the grain of the institution, emphasizing the development of general intellectual skills rather than the mastery of specialized knowledge, coherence and connection rather than the individual discipline. Furthermore, he or she has no weight of hierarchal authority to exercise in support of the office's mission, for the faculty member's professional advancement lies in the hands of colleagues, department chairmen, and college deans. The voice of the Dean for Undergraduate Studies is likely to carry little weight in salary, promotion and tenure decisions.

One might just as well use academic advising or student-designed majors or instructional improvement to illustrate this incongruity of emphasis between the Dean's goals and those of the institution generally. That Deans for Undergraduate Studies make significant things happen--and most do--is a function of their abilities of moral suasion, their willingness to recognize the nature of the university and compromise with it, and their having a little money to spread around. But most of all they enjoy the active cooperation of a substantial number of department chairmen and faculty who, even to their detriment, will recognize the university's larger responsibilities to the education of undergraduate students and act upon it.

This discussion of the role and frustrations of the Dean for Undergraduate Studies is likely to strike anyone but an American academic as rather bizarre. Such a position would be irrelevant in most of the world's universities, since only in North America do students come to the university without the presumption that they have an adequate general education and are ready to make a commitment to a specific academic and occupational future. There is no question in most of the world's higher education about a general education program, advising outside of the major or students designing their own interdisciplinary undergraduate programs. The Dean for Undergraduate Studies could exist only in an American university. There the dean is the administrative reflection of the university's concessions to its undergraduates: support for academic exploration; greater individualization of program; care about teaching; a variety of kinds of learning opportunity.

The institutionalization of these concerns has increased remarkably in American universities since the late 1960's. Professionally staffed advising offices, experiential learning programs, individualized degree programs and instructional development centers are commonplace. General education has enjoyed a renaissance. These activities have grown particularly strong in those universities that have created deans for undergraduate studies to pay special attention to their development. By focusing and fostering those activities that the central academic hierarchy of the university would otherwise neglect, by giving them a voice at the highest levels of academic administration, the Dean for Undergraduate Studies has had a significant effect on the direction of universities in the United States.

DO TEACHERS NOTICE TEXTBOOK FLAWS ?

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Beginning in the upper elementary grades, expository texts become major vehicles for knowledge acquisition (Aulls, 1982; Kintsch, 1982). Together with teacher talk, textbooks become the most important sources of information about objects and events that students encounter in school. It is important, then, that textbooks contribute to comprehension and learning rather than hinder knowledge acquisition.

Armbruster and Anderson (1981) have identified characteristics of what they call "inconsiderate text," that is,expository text material that requires readers to expend extra cognitive effort to compensate for an author's failure to provide adequately-structured, coherent, unified text that is appropriate for the reading audience at hand. "Inconsiderate text" is not incomprehensible but it is difficult to process, particularly for novice readers. Most readers in the fourth, fifth, and sixth grades are novices at reading exposition, for they have had most of their primary-grade reading experience with narratives in basal readers (Spiro & Taylor, 1980).

We were interested in finding out if teachers, particularly beginning teachers who are less familiar with standard textbooks, notice "inconsiderate text" features and take action to compensate instructionally for text flaws. We selected five of the characteristics of "inconsiderate text" identified by Armbruster and Anderson for further study. They were as follows: a) a mismatch between structural signals (e.g., headings, topic sentences) and content that follows; b) short, choppy sentences that obscure relationships among ideas; (c) irrelevant information that potentially distracts readers; d) insufficient information given the probable prior knowledge of readers; and e) lack of definitions for difficult vocabulary words. Support for a relationship between existence of these characteristics and comprehension-learning difficulties is both empirical (Alvermann & Boothby, 1983; Loman & Mayer, 1983; Reder, 1982; Slater, Graves, & Palmer, 1982) and intuitive (Kantor, Anderson, & Armbruster, 1983).

Method

We asked 17 student-teachers in their final semester of pre-service work to participate in an instructional planning session as part of their semester academic requirements. All had been assigned to intermediate classroom teaching assignments in elementary schools affiliated with one of four teacher education centers in Maryland. Representation of urban, rural, and suburban placements was nearly equal. All 17 student-teachers were female.

We surveyed a number of intermediate social studies textbooks in common use in Maryland classrooms. Many segments in many texts from various publishers provided instances of the five characteristics of "inconsiderate text." From among those, a particular segment of moderate length (four pages, including pictures) was selected. The topic of the segment entitled "The New Nation Grows" (Eibling, King, & Harlow, 1965) was political, geographical, and military expansion of the newly-formed United States. The text, designated for use in fifth-grade social studies programs, was not modified for the study, except that five marginal notes to teachers were not photocopied for the materials package given the student-teachers.

Nineteen undergraduate students enrolled in a pre-service reading methods course helped to validate problematic features in the text segment. Those students were given copies of the text and the direction to locate instances of each of the five "inconsiderate text" characteristics. Instances mentioned by at least 15 of the undergraduates were noted. It was for these instances that beginning teachers' awareness and corrective action were assessed. The set of "inconsiderate text" examples appears below:

Mismatch Between Structural Signals and Content that Follows

A Useful Water Route. Jefferson helped our young country grow strong in many ways. By the first of his wise acts, he doubled the size of our land.

Americans who moved west of the Appalachians settled along streams and rivers. When they had goods to sell, they liked to load them on boats and float the boats downstream to New Orleans. At that time Spain owned New Orleans and land on both sides of the Mississippi. The Americans sold some of their goods to the Spaniards.

At New Orleans, also, the bacon, lard, corn, wheat, flour, hides, and other goods could be loaded on ships. These ships then carried the goods out into the Gulf of Mexico and up the coast to cities along the Atlantic.

Then the picture changed. Spain was about to turn over New Orleans to the French. With the city would go the land called Louisiana.

Short, Choppy Sentences

This little man wanted to be the ruler of all Europe! President Jefferson realized that Napoleon might close the Mississippi to American ships. He hurried to Congress.

"We must try to buy New Orleans and the land along the gulf," he said. " We must be sure that no one closes the Mississippi."

Congress voted two million dollars to buy the land. Jefferson wrote a letter to Robert Livingston in Paris. "Try to make a deal with Napoleon," he said.

Irrelevant Information

Danger Ahead! At this time the ruler of France was a short man with a long name. Napoleon Bonaparte...

Insufficient Information

The Tripoli pirates robbed all the merchant ships they could find except the ships of countries that paid them "protection money." Most of the big countries of the world, including the United States, paid the Tripoli pirates "protection money" once a year.

Lack of Definition

The Navy bombarded Tripoli and her ships.

Two graduate research assistants directed the student-teachers in completion of their task in four small groups, one at each teacher education center. The assistants alternated in the roles of direction giver and observer. In giving directions they worked from a script that mentioned "problems" with the text, but they did not cue students with any direct probes (See Ericsson & Simon, 1980). Each session lasted approximately 45 minutes, although no precise time limit was established.

Student-teachers were told to read the entire text three times. They were directed to jot down notes "next to chapter segments where you think students might experience difficulty understanding the material." When they had finished studying the text for potential problems, they were told to write specific instructional plans for teaching the text information. They were directed to provide: a) objectives, b) instructional procedures, c) student activities, d) print and non-print resources to be utilized, and e) evaluation procedures. When questions arose, appropriate portions of the script were restated. All directions were presented orally and then were made available in print to lessen memory load (see Garner, Macready, & Wagoner, 1984).

Findings

Student-teacher attention to the five instances of "inconsiderateness" was scored in a straightforward fashion. One of the investigators read all 17 marked texts, noting the teachers' marginal notes on text problems. Any mention of any of the five characteristics (at gist level) was awarded one point. Potential range of scores for any individual teacher, then, was 0-5. For the group, 85 opportunities for noting "inconsiderateness" existed. One of the graduate research assistants scored all 17 marked texts independently of the investigator; inter-rater agreement (ratio of agreements to agreements plus disagreements) between the investigator and assistant was .99.

Only two student-teachers noted any of the "inconsiderate text" characteristics. One commented on the mismatch between structural signal (subheading) and content that followed, and one mentioned that insufficient information was provided about the merchant ship system and payment of "protection money" to provide security for the ships. These two comments represented 2% of all oportunities for noting "inconsiderateness."

For these two beginning teachers, we studied the instructional plans to see if any instructional intervention to compensate for these flaws had been included. The teacher who noted the heading-content mismatch discussed both of the following options: a) using a graphic organizer on an overhead transparency to focus attention on relevant information in the "water route" section, and b) asking fifth-grade students to prepare a water route map using additional text resources from the library. The teacher who mentioned the insufficient information problem included a direct explanation of "protection money" and a number of examples in her instructional plans.

The 15 student-teachers who failed to mention any of the "inconsiderate text" features in their marginal notes tended to display one of two patterns: no marginal notes at all (n=8), or a preponderance of circled long words and underscored subheadings. (Whether or not the latter indicates attention to textual relevance cues is unclear as neither elaborative marginal comment nor embellishment in instructional plans was provided.) None of these 15 teachers mentioned any instructional intervention to remedy any of the "inconsiderate text" flaws in their instructional plans.

Discussion

Within this study, with a social studies text sample, beginning teachers did not demonstrate detection of "inconsiderate text" features with any high frequency. On the contrary, only 2 of 17 teachers mentioned any flaws, and these teachers each detected only a single problem of five appearing in the text segment. It is perhaps not surprising, then, that there was little action specified in instructional plans to compensate for the flaws, to assist fifth-grade students in comprehension and learning.

This is an alarming finding. Given the pervasive use of textbooks in the upper elementary grades, and the existence of "inconsiderateness" in many of these books, the need for teachers to help students learn from flawed texts (Armbruster, 1984) by applying appropriate text fix-up strategies is apparent. It may well be, as other have argued (e.g., Alvermann & Boothby, 1983; Armbruster & Gudbrandsen, 1984) that the broadly documented surge of reading problems in the upper elementary grades can be accounted for in large measure by a combination of flawed expository texts and missing instructional assistance.

It seems obvious to us that pre-service methods courses need to offer experiences for prospective teachers in noticing and compensating for text flaws. It is perhaps so obvious to us because the student-teachers who were so unable to note and compensate for text flaws were products of our methods sequence, which includes courses in language arts, mathematics, reading, science, and social studies. We have initiated a cross-content curriculum change to include this text examination component in the elementary education methods sequence.

This text examination component is not simply the one-page, one-assignment evaluation of elementary school texts found in the typical university curriculum library. Instead, it is a text examination experience which requires prospective teachers to analyze text chapters from the various content areas in detail for the features of "inconsiderate text" examined in this study. Short of the impossibly grand task of applying "ideal" text selection criteria to all new textbooks, we hope to at least assist prospective teachers in offering remedies to the students who will attempt to learn from "inconsiderate texts."

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APPROXIMATED DIRECTED GRAPH OF FUZZY GRAPH

—— An Application to Instructional Design in Higher Mathematics ——

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1 Introduction

Inexact phenomena concerning human behavior, mental process and cognition are ofen represented by fuzzy graphs. In order to catch the total feature of such information, it is effective to extract the global structure of a fuzzy graph and represent it as a directed graph.

In this paper, we firstly summerize the extraction method for finding out the global structure of a fuzzy graph, and secondly discuss the practical application to the instructional design and revision in Mathematics. The supporting system CARAT has been developed and utilized among us.

2 Extraction Algorithm

A fuzzy graph is represented by a fuzzy relational matrix $\underset{\sim}{F}=(\underset{\sim}{f}_{ij})$, briefly speaking, $0\leq\underset{\sim}{f}_{ij}\leq 1$ for $i\neq j$ and $\underset{\sim}{f}_{ij}=1$ for $i=j$.

Definition 1 The τ-cut graph F_τ of a fuzzy graph $\underset{\sim}{F}$ is a directed graph defined by

$$F_\tau=(f_{ij}^{\tau}),\quad f_{ij}^{\tau}=\begin{cases}1 & (\underset{\sim}{f}_{ij}\geq\tau)\\ 0 & (\underset{\sim}{f}_{ij}<\tau)\end{cases} \tag{1}$$

where τ is a threshold parameter between 0 and 1.

Definition 2 The coincidence index (C − index) between a fuzzy graph $\underset{\sim}{F}$ and its τ-cut graph F_τ is defined by

$$C(\underset{\sim}{F},F_\tau)=\sum_{i,j}|\underset{\sim}{f}_{ij}-f_{ij}^{\tau}|/n(n-1) \tag{2}$$

which is a normalized distance between $\underset{\sim}{F}$ and F_τ.

The C − index between $\underset{\sim}{F}$ and F_τ ranges over [0, 1], and F_τ is considered to be similar to $\underset{\sim}{F}$ if $C(\underset{\sim}{F},F_\tau)$ is close to 0.

Definition 3 The graph F_τ is defined to be similar to the graph $\underset{\sim}{F}$ $(F_\tau\sim\underset{\sim}{F})$ if $C(\underset{\sim}{F},F_\tau)<\varepsilon$, where ε is a small constant between 0 and 1 obtained by the fuzzy decision Morioka[10].

The value of the C-index between $\underset{\sim}{F}$ and F_r changes depending up on the parameter r, and we have the coincidence curve (C-curve).

$$C(r) = C(\underset{\sim}{F}, F_r) \tag{3}$$

F_{r_0} is considered to be optimally similar to $\underset{\sim}{F}$ if $F_{r_0} \sim F$ and r_0 gives the minimum value of the C-curve.

Definition 4 The graph F_{r_0} is defined to be optimally similar to the graph $\underset{\sim}{F}$ ($F_{r_0} \approx \underset{\sim}{F}$) if $F_{r_0} \sim \underset{\sim}{F}$ and $C(r_0) = \underset{r}{\mathrm{Min}}\, C(r)$.

Generally, such r_0 ranges over $(\underline{r}, \overline{r}]$ which is called the support of F_{r_0} with $F_{r_0} \approx \underset{\sim}{F}$. On the other hand, according to the symetrical property of the C-index concerning 0.5, 0.5 is always in the support $(\underline{r}, \overline{r}]$ of F_{r_0}.

Theorem 1 The r-cut graph $F_{0.5}$ is optimally similar to the fuzzy graph $\underset{\sim}{F}$ if $F_{0.5}$ is similar to $\underset{\sim}{F}$.

For reasonable determination of r_0, we usually defined it as $\underset{r}{\mathrm{Sup}}(\underline{r}, \overline{r}]$.

Theorem 2 The r-cut graph F_{r_0} is optimally similar to the fuzzy graph $\underset{\sim}{F}$ if $F_{0.5}$ is similar to $\underset{\sim}{F}$ and the support $(\underline{r}, \overline{r}]$ of F_{r_0} contains 0.5 with $r_0 = \underset{r}{\mathrm{Sup}}(\underline{r}, \overline{r}]$.

The r-cut graph F_{r_0} of $\underset{\sim}{F}$ with $F_{r_0} \approx \underset{\sim}{F}$ is called the approximated directed graph of $\underset{\sim}{F}$ and reasonably represents the global structure of $\underset{\sim}{F}$.

Finally, we have the extraction algorithm to find the approximated directed graph (A-graph) F_{r_0} of a fuzzy graph $\underset{\sim}{F}$.

Algorithm: Extraction of the A-graph.

1. Compute the C-index $C(0.5)$ between the graph $\underset{\sim}{F}$ and the graph $F_{0.5}$.
2. If $C(0.5) < \varepsilon$, then find the support $(\underline{r}, \overline{r}]$ which contains 0.5 and let F_{r_0} with $r_0 = \underset{r}{\mathrm{Sup}}(\underline{r}, \overline{r}]$ be the A-graph, else no A-graph exists.

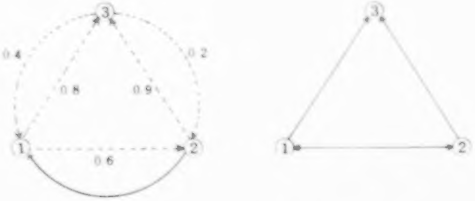


Fig.1 (a) Graph $\underset{\sim}{F}$, (b) Graph $F_{0.5}$

An illustrative example is shown in figurers. The C−index $C(\underset{\sim}{F}, F_{0.5})$ is less than ε for $\underset{\sim}{F}$ in Fig. 1(a) and we have the support $(0.4, 0.6]$. Therefore, the A−graph of $\underset{\sim}{F}$ is $F_{0.6}$ in Fig. 1(b). The related C−curve $C(r)=C(\underset{\sim}{F}, F_r)$ is also shown in Fig. 2.

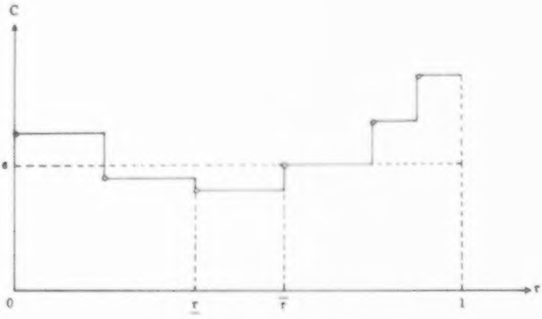


Fig. 2 C−Curve $C(\underset{\sim}{F}, F_r)$

3 Application to Instructional Design

We discuss a practical application to the instructional design and revision in Mathematics. We would verify or modify the instructional structure of an instructor by comparing it with the learning process of the students.

The procedure of the instructional design and revision of a subject matter is shown in Fig. 3.

Step 1 Logical Structure Analysis

We analyze the prerequisite relations among the instructional nodes and clarify the instructional structure.⟶Graph L

Step 2 Teaching Program Design

We design the teaching program by arranging the instructional nodes suitably in order and give lecture to the students.⟶Graph P

Step 3 Performance Test Edition

We edit the test which properly checks the learning status of the students and execute it in the classroom.⟶Graph T

Step 4 Test Data Analysis

We score the test, analyze the response data and obtain the connectivity relations among the test−items.⟶Graph $\underset{\sim}{F}$

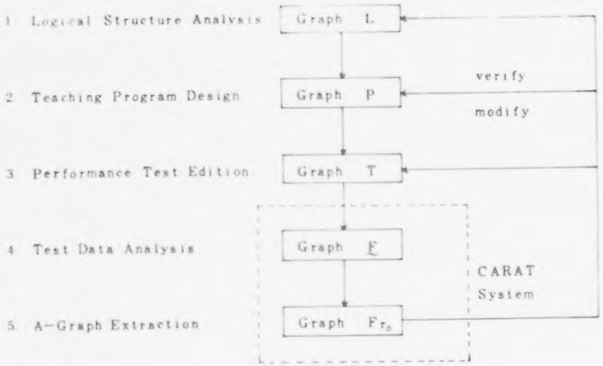

1 Logical Structure Analysis
Graph L
2 Teaching Program Design
Graph P
verify
modify
3 Performance Test Edition
Graph T
4 Test Data Analysis
Graph $\underset{\sim}{F}$
CARAT
System
5 A-Graph Extraction
Graph F_{τ_0}

Fig. 3 System Diagram of Instructional Design

Step 5 A-Graph Extraction

We extract the approximated directed graph which properly represents the global structure of $\underset{\sim}{F}$. $\longrightarrow$ Graph F_{τ_0}

Step 6 Comparison of L and F_{τ_0}

We compare the graph L (the instructional structure of an instructor) with the graph F_{τ_0} (the learning process of the students).

If L is equal to F_{τ_0}, then we could verify the teaching program, else we should modify it based on the test data.

For these analysis, the supporting system CARAT has been cooperatively developed by Waseda University, Tamagawa University and NEC, and practically utilzed among us.

The following case study is concerning the differential equation (4) experimented in Waseda University.

$$y'' + ay' + by = f(x) \qquad (4)$$

Step 1 We analyzed the logical structure of the difference equation and constructed the directed graph L in Fig. 6(a), since the equation (4) has the properties : (H) homogeneous type, (I) Inhomogeneous type, (R) characteristic equation with real roots and (C) characteristic equation with complex roots.

Step 2 We designed the teaching program as in Fig. 4 and gave lecture to the students in 1983.

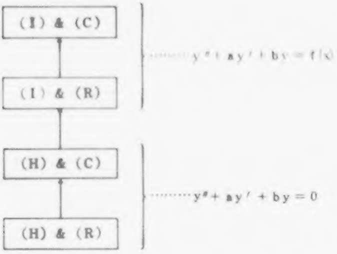
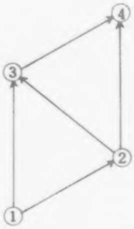

(I) & (C)
(I) & (R)
(H) & (C)
(H) & (R)
$y'' + ay' + by = f(x)$
$y'' + ay' + by = 0$

Fig. 4 Teaching Program P

Step 3 We edit the test of four categories as in Fig. 5 and executed it in the classroom.



① $y'' - 5y' + 6y = 0$

② $y'' - 4y' + 5y = 0$

③ $y'' - 6y' + 8y = e^{3x}$

④ $y'' - 4y' + 8y = e^{3x}$

Fig. 5 Test Edition T

Step 4 We scored the test, analyzed the data and constructed the fuzzy graph $\underset{\sim}{F}$ as in Fig. 6(b).

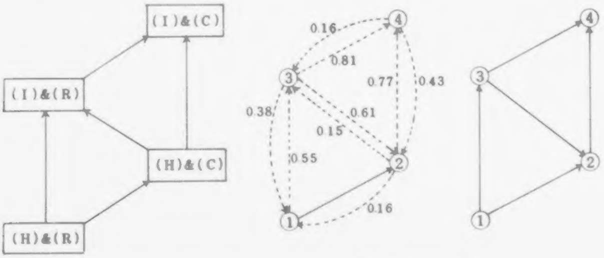

(I)&(C)
(I)&(R)
(H)&(C)
(H)&(R)
0.16
0.81
0.77
0.43
0.38
0.61
0.15
0.55
0.16
①
②
③
④

Fig. 6 (a) Graph L (b) Graph $\underset{\sim}{F}$ (c) Graph $F_{0.55}$

Step 5 We computed the C-index $C(0.5)$, which is less than ε and we found the support $(0.43, 0.55)$. Thus, we extracted the A-graph $F_{0.55}$ as in Fig. 6 (c).

Step 6 We compared the graph L with the graph $F_{0.55}$ and obtained the following information.

〔1〕 The relations (H)&(R)⟶(I)&(R) and (H)&(C)⟶(I)&(C) of the instructor are verified.

〔2〕 The relations (H)&(R)⟶(H)&(C) and (I)&(R)⟶(I)&(C) of the instructor are verified.

〔3〕 The relation (H)&(C)⟶(I)&(R) of the instructor is opposite to that of the students.

The information 〔3〕 suggests us that we necessarily review the complex number especially the properties of $e^{i\theta}$ before we lecture the differential equation.

Step 2' We modified the teaching program as in Fig. 7 (b) and gave lecture to the students in 1984.

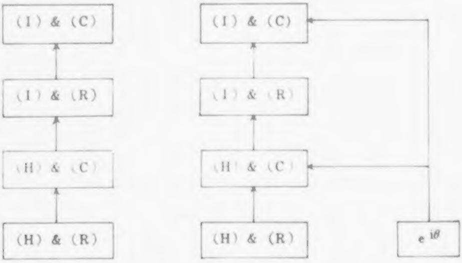
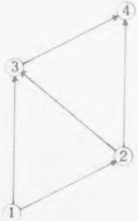


Fig. 7 (a) Primitive P (b) Modified P'

Step 3' We edit the test of four categories as in Fig. 8 and executed it in the classroom.



① $y'' - 4y' + 3y = 0$

② $y'' - 4y' + 5y = 0$

③ $y'' - 5y' + 6y = e^{4x}$

④ $y'' - 2y' + 5y = e^{4x}$

Fig. 8 Test Edition T'

Step 4′ We scored the test, analyzed the data and constructed the fuzzy graph $\underset{\sim}{F}$ as in Fig. 9(b).

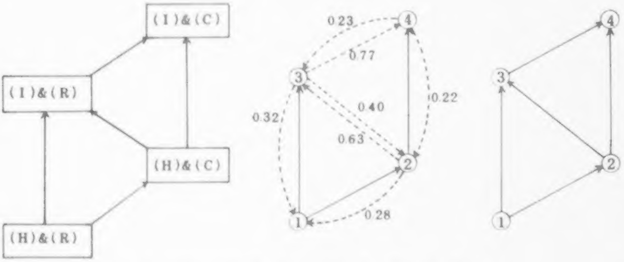


Fig. 9 (a) Graph L (b) Graph $\underset{\sim}{F}$ (c) Graph $F_{0.63}$

Step 5 We computed the C-index C(0.5), which is less than ε and we found the support (0.40, 0.63]. Thus, we extracted the A-graph $F_{0.63}$ as in Fig. 9(c).

Step 6′ We compared the graph L with the graph $F_{0.63}$ and recognized that they were coincided.

It claims that the modified teaching program has been verified based on learning process of the students. Thus, we have completed the instructional design and revision concerning the differential equation.

4. Conclusion

We have summerized the extraction method for finding out the approximated directed graph (A-graph) of a fuzzy graph and discussed an application to the design and revision of the teaching program. Although the case study is presented concerning higher Mathematics, the instructional analysis supported by the CARAT system is available for arbitrary subjects.

ACKNOWLEDGEMENT

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PROBLEMS OF INDIVIDUAL STUDENT DIFFERENCES IN BACKGROUND

FRIDAY, 5 JULY

0830 - 1000

MATURE OVERSEAS STUDENTS
IN HIGHER EDUCATION

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University College, Cardiff

Aims of the Investigation

As part of a larger study of mature overseas students, information was sought on the anxieties felt by such students in relation to themselves, their families and their fellow-students and academic work. Aspects included were:

1. Students themselves: emotional, cultural, physical and academic difficulties.
2. Students' families:
    a. Children's emotional, physical and scholastic well-being.
    b. Adult dependants' situation during the period of overseas study.
3. Sources of support: for themselves in relation to their families and their academic work; and how such support could be improved or extended.

Subjects of the Investigation

199 of the 249 mature overseas students (78 women and 171 men) enrolled on the BEd in-service degree course at University College, Cardiff, in 1983, are the subjects of this study. The majority were from Nigeria Brunei and Hong Kong. 92.5% of the students were married and these married students have, on average, 4.4 children on their own, are looking after 2-3 children of relatives and were responsible for 1-2 adult dependant relatives also. Thus this investigation adds to available knowledge by focussing on mature overseas students, the majority of whom are married, with children of their own as well as adult and child dependants from the extended family.

Data Collection

A pilot study involving discussion and amendment of a draft questionnaire was carried out with 21 of the students (seven women and fourteen men). The final questionnaire was then distributed to the remaining 228 students. 199 completed questionnaires were returned, a response rate of 88%. In addition, interviews were held with a small group of volunteer students to check assumptions which seemed feasible on the basis of patterns emerging in the data.

Data Aanalysis

Information obtained from the questionnaires was coded by the investigators for the SPSS 8.0 computer package. Interview material is used throughout in the interpretation of the patterns emerging.

Results

1. Age of Students

Table 1

Age of Subjects

Age of Students	Female %	Male %	%
20-25	2.5	0.5	3.0
26-30	5.5	7.0	12.6
31-35	4.5	23.1	27.6
36-40	10.1	19.1	29.1
41-45	8.0	15.6	23.6
46-50	0.5	3.0	3.5
51-55	0.5	0.0	0.5
Total	33.6	68.3	

2. Students' Expressed Personal Anxieties

Table 2

Sources of Anxiety in Studying Overseas

Source of Anxiety		Anxiety felt		
		All the time	Some of the time	Never
Group 1 Related to home country	(i) High Family Expectations	87.2%	11.7%	1.0%
	(ii) Miss Family	45.3%	49.5%	5.2%
	(iii) Miss Country	37.8%	52.6%	9.7%
Group 2 Related to UK -Physical	(i) Suffer from cold	29.9%	60.8%	9.3%
	(ii) Food very different	7.2%	44.8%	47.9%
Group 3 Related to Academic Resources	(i) Student competition	29.9%	55.4%	14.7%
	(ii) Tutors unapproachable	16.1%	29.7%	54.2
	(iii) Fear of failure	2.1%	15.8%	82.1%
Group 4 Related to Finance	(i) Money Shortage	10.6%	68.6%	20.7%
Group 5 Related to UK -Emotional	(i) Hard to make friends	28.2%	44.1%	27.7%
	(ii) Communication problems	6.2%	58.2%	35.6%
	(iii) Unfriendly people	2.1%	32.0%	66.0%

3. **Anxieties in Relation to Children and Family**

Table 3

Anxieties in Relation to Children and Family

Source of Anxiety		Anxiety felt		
		All the time	Some of the time	Never
Group A Concerned with children	(i) Children's emotional problems	21.8%	68.5%	9.7%
	(ii) Need for both parents	41.0%	43.5%	15.5%
	(iii) Lack of emergency contact	23.2%	55.5%	21.3%
	(iv) Guilt at absence	26.3%	51.5%	22.2%
	(v) Lack of money restricts emergency travel	34.4%	37.4%	28.2%
	(vi) Children's physical safety	24.8%	42.9%	32.3%
	(vii) Children's studies	23.7%	42.3%	34.0%
	(viii) Spouse too busy	18.6%	44.9%	36.5%
	(ix) Children's exams	17.4%	36.8%	45.8%
	(x) Teenage supervision)	15.0%	38.6%	46.4%
	(x) Children's physical care)	15.5%	38.1%	46.5%
	(xi) Weakened emotional ties	5.1%	22.3%	72.6%
Group B Concerned with parents and older relatives	(i) Worry about elderly mother	36.6%	47.8%	15.7%
	(ii) Other relatives unconcerned with care of elderly parents	21.7%	58.3%	20.0%
	(iii) Worry about elderly father	33.0%	45.1%	22.0%
	(iv) Worry about other elderly relatives	20.8%	57.3%	21.9%

4. Sources of Support

Table 4

Sources of Support in Dealing with Problems and Anxieties

Source of Support In Order of Priority	Ranked First	Ranked Second
Conviction of ultimate family benefit from studies.	50.8%	19.6%
Support of tutors.	22.6%	13.6%
Letters from spouse and family.	18.1%	17.1%
Religious beliefs.	24.6%	10.1%
Ease of obtaining study materials.	9.5%	12.6%
Helpful library staff.	12.6%	3.0%
Fellow students' support.	3.0%	12.6%
Ease of communication with family and friends.	6.0%	8.0%
Friendly attitudes of local people.	4.0%	9.5%
Support of friends outside the university.	1.0%	6.5%

Discussion of the Results

The results presented here both confirm and add to the findings of the Grubb Institute (1978) and Zwingmann and Gunn (1983). In the Grubb Institute survey, the standpoint was UK focussed, analysis of students' reactions to their new environment (whether as student, client or visitor) being central. Zwingmann and Gunn, on the other hand, focus on the psycho-social problems of students from abroad and take 'uprooting' as their central concern, defining it as "the partial severance of the individual's interaction with his primary milieu and/or affective reference objects, and this separation may be both spatial and temporal" (p. 14). What the present study demonstrates, through the relative importance of the different anxieties shown by their frequencies of occurrence, is that when 'uprooting' and 'UK roles' are considered together, the greatest source of anxiety is related to the 'uprooting' phenomenon.

It would seem that support networks and preventative measures to deal with the most constant types of anxiety are of paramount importance for mature overseas students. By helping students to anticipate such anxieties and to recognize their common occurrence, tutors could help students towards an 'adequate reaction' (Zwingmann and Gunn, 1983, p. 15) to uprooting.

Roderick and Bell (1981) suggest that institutions of higher education can do little about the great domestic and financial problems of mature students. From this study and others, it would seem that much preventative work could in fact be undertaken. Zwingmann and Gunn (1983) suggest measures to be taken under three headings - preventative, diagnostic and remedial. It is in the 'preventative' category that the role of the academic staff involved with such students could have greatest effect. Students' initial and greatest contact is with the ordinary members of staff who act as tutors. If tutors are aware of the problems and anxieties facing such students, they can help the students to anticipate common emotional, physical and academic sources of stress.

Personal and family pressures can interfere with the students' ability to concentrate on academic work. Informed and informal pastoral care and reassurance to the students that pastoral care is available to them and will not be confused with academic assessment would be of use. There are suggestions in the findings of this study that the separation of pastoral and academic tutoring might be beneficial. One suggestion that emerged in this study was that personal tutors should be the same for the students throughout the course, and not necessarily the same member of staff as the academic tutor. Overseas students interviewed in the Grubb Institute Report (1978) indicated that established student welfare services do not offer the type of support desired by such students. Those students seemed to favour an arrangement whereby they could build a relationship with a member of staff, in order to discuss problems pertaining to membership of the institution. This does not conflict with the findings of the present study, although we would suggest that matters of a personal nature related to problems or anxieties outside the systems outlined by the Grubb Report should also be raised (for example, health, concern for members of the family in the home country and finance). In this latter respect, the personal tutor (referred to as the 'moral tutor' in the Grubb Report) might in some ways be fulfilling the role played by a conventional welfare/counselling service. Certainly, liaison between tutors and specialist counselling staff needs to be developed and extended.

Some of the problems and anxieties identified are similar to those of the home mature students - extensive family role conflict, guilt and strain on resources. In addition, the overseas students can be troubled by homesickness, additional guilt at being so far away and pressures to succeed in their academic work which are heightened by the great sacrifice entailed for themselves and their families in overseas study. Hence, the importance of easy communication, letters from home, sympathetic understanding and support from fellow-students, tutors and the community. The fact that these mature students appear to draw greatest strength from their conviction that the period of overseas study is to the ultimate benefit of their families shows how important it is that they be given every possible assistance to succeed. To do this, their roles as student, client and visitor must be acknowledged and facilitated.

One of the problems of academic work is isolation (Delamont and Eggleston, 1981). All mature students face this problem but for overseas students it can be heightened by the 'closed' or 'open' nature of the system they join as students, clients and visitors. From interview discussions, a concern at the lack of contact between these mature overseas students and their home student counterparts emerged. Mature British students, undertaking the BEd course part-time and meeting the demands of a full-time teaching job and a family during the day, themselves experience feelings of isolation within the institution. Yet these are the home students with whom mature overseas students might have much in common. In their accommodation and daytime, informal contact, however, these overseas students are more likely to meet and share facilities with a much younger undergraduate student population with whom they may have little in common. Again, during interviews, clashes of temperament and attitudes between themselves and the younger home student group were reported by the overseas students. Friendly overtures made on both sides often came to nothing because of this, resulting in feelings of isolation and a tendency of the overseas students to become a 'closed' system themselves. There is a role here for the students' union to play, particularly the mature students' society, in bringing together the home and overseas mature groups.

Religious beliefs were identified as an important source of support by the students in this study and here might be found a link with the wider local community which could also help to alleviate problems of isolation. Links could be established with religious organisations in the community, so that students are brought more into contact with local people outside the academic institution.

In our experience, it is confident, out-going students who make such contacts independently, while the less confident can spend the whole two-year period isolated from the local community and from interests outside the university. Efforts to build community links and better organised sources of information for students on arrival could ensure a richer and wider experience for the students and provide a buffer against personal stress and anxiety. The benefits to the local community, too, would be considerable in terms of wider knowledge of overseas countries and people which could help counteract prejudice and distancing resulting from fear or ignorance. These students could also provide a rich resource for cross-cultural contact (for example, in schools where multicultural curricula are being established) and could in turn benefit from the recognition of their maturity and professional status that such contacts could demonstrate.

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DISPELLING THE MYTH OF A HOMOGENEOUS FRESHMAN CLASS

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Nineteenth century American education was committed to free elementary schooling as evidenced in the common school movement of the time. The belief was that a democratic government should have educated people to rule. With the development of free, public, secondary education, American citizens had an opportunity to pursue their quest for knowledge beyond the elementary years. As more students received a high school education, attention was gradually focused on higher education. Programs were designed to recruit and meet the needs of non-traditional students from diverse backgrounds. With their implementation, free education from elementary school through college became a reality in many states.

Algier and Algier (1982), commented that, as more students were provided opportunities to attain an undergraduate degree, different methods and evaluation procedures should be utilized to help them to succeed. Coleman (1982) agreed; he affirmed that college education had become both desirable and accessible, and that institutions which had accepted students who needed academic support, should provide training so they successfully could compete with traditional populations. Redmon (1982), further elaborated on the special needs of that increasing population of marginally-prepared students. Although those students are earnest and enthusiastic in their desire for a college education, the ways and means of achieving acceptable grades were often obscure to them. Conventional college instruction assumed proficiency in basic skills, particularly writing and reading. The marginal students, however, required intensive training in one or both of those areas.

College freshman classes currently contain students who vary greatly in their ability to learn new material; many need a guided, structured instructional experience. Cronbach and Snow (1980) urged researchers to investigate the relationships between individual differences in learning ability and responsive classroom instruction and to organize remedial approaches by coordinating methods and students' characteristics. In that regard, Freeley (1984) urged colleges to adapt to evolving conditions, particularly in meeting the needs of diversified students.

The Impact of Learning Styles

During the past two decades, American educators painstakingly endeavored to provide a quality education for all students. Eison (1984), stated that one of the lessons learned was that to achieve that goal, accommodations and provisions had to be made to respond to the learning styles of the diversified populations that needed to be educated. Repeatedly, pioneers in learning style theory including Dunn and Dunn (1978), Gregorc (1977), and Hunt (1979), advocated the matching of complementary resources and individual learning styles. That matching resulted in higher achievement, better attitudes toward school, and improved attendance. In addition, alternative education pioneers such as Fantini (1980), Glatthorn (1977), and Raywid (1983), also advocated varied approaches to meet the needs of nontraditional learners. Therefore, many elementary and secondary educators began to recognize that provisions for students' unique characteristics should be made at all levels.

The Pilot Study

In light of the admission of nontraditional students into higher education programs and the expanding national emphasis on individual learning styles, colleges and universities with such populations should investigate the effects of developing strategies responsive to the characteristics of underprepared students. Thus, in 1983, a study was conducted to examine the learning styles of freshmen at a private, urban institution.

Test Used

The study utilized an adult learning style instrument, the *Productivity Environmental Preference Survey* (PEPS) (Dunn, Dunn and Price, 1981). That instrument analyzes individual adult's personal preferences for each of 18 different elements in the areas of environmental, emotional, sociological, and physical needs.

Population Tested

Four groups of twenty college freshman and twenty selected faculty members were administered the PEPS. The freshman groups included academic scholarship winners, traditionally prepared students, marginally prepared students, and underprepared students categorized on the basis of a number of criteria.

Although the college reduced the program load for the marginally prepared and underprepared students, nothing was done to help them overcome their deficiencies in the college courses in which they registered. It appeared reasonable to assume that, if the faculty were provided data concerning how those groups differed from each other and from the faculty who taught them, an understanding of their learning styles and appropriate accommodations might result.

Results of Pilot Study

Initially, analysis of the PEPS' data evidenced that a strong preference for quiet and bright light while learning was prevalent among the underprepared students, suggesting that such people were distracted by noise or activities and were unable to concentrate in dimly lit environments. In support of that hypothesis, Krimsky (1981) demonstrated that students' scores on a reading speed and accuracy test had been affected by the environmental illumination. Similarly, Pizzo's (1981) data evidenced that students' scores on reading achievement and attitude tests were affected by sound in the instructional environment. Therefore, it appeared that those same two characteristics affected the underprepared students and warranted further investigation.

Second, both the underprepared and marginally prepared students demonstrated a very strong preference for structure and working with an authority figure present. Unfortunately, many traditional college courses lack the extreme structure required by those two groups of students.

Third, the strongest perceptual preference among faculty, traditionally prepared and underprepared students was visual followed by a preference for kinesthetic activities. The auditory modality, which in fact, is the approach used most often in college classrooms for conveying information, was the least favored perception of all groups.

Fourth, scholarship winners, the marginally prepared and the underprepared students evidenced a preference for afternoon scheduling; that was the least preferred time of day for faculty.

The research conducted by Lynch (1981) demonstrated the importance of time scheduling among faculty and students and its influence on truancy. Those findings were later corroborated by Freeley's (1984) investigation concerning faculty time of day preferences. In addition, Freeley's data evidenced a relationship between learners' time of day preferences and their perceptual strengths.

Outgrowths of Pilot Study

As a result of the initial investigation, the College Faculty Development Committee endorsed the use of different methods of presentations and evaluation from those previously employed. Selected procedures were demonstrated by instructors in various disciplines at a Faculty Forum workshop attended by the administrative and instructional staff. In addition, numerous efforts were made to increase the number of non-lecture instructional approaches and to utilize varied sociological groupings to improve student learning.

Finally, that initial study provided the impetus for an investigation currently being conducted to determine the effects of structure, in the form of pre-organizers in reading and writing,on the the grades of underprepared and marginally prepared college students. As in the pilot investigation, each student will be diagnosed for his/her learning style preference with the focus being on the need for high or low structure.

The element of imposed structure to improve reading and writing competencies is of particular interest because each of seven published educational commissions' expressed concern about the need for improvement of basic skills (The Almanac of National

Reports, 1983). Furthermore, research indicated that variations in class structure altered academic performance (Hunt, 1982; Shaw and Bunt, 1973). Additionally, it was demonstrated that students in highly structured situations perceived a greater amount of control over their own achievement (McGhee and Campbell, 1968).

Thus, it appears reasonable to expect that students in highly structured classes should perform better if they do prefer structure, since they perceive themselves as having greater control over their performance and their learning styles will have been operative in a congruent condition. Similarly, students in a low-structured class should perform better if they prefer less structure for they, too, will be learning in a congruent condition.

Conclusion

The present investigation is concerned with effective instructional methods for teaching marginally prepared and underprepared college students and includes an examination of the relationships between the learning style characteristics of nontraditional student populations and imposed structure through pre organizers in writing and reading. It is the authors' hope that this research will provide a foundation for meeting the needs of heterogeneous college freshmen.

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A CRISIS INTERVENTION MODEL IN COLLEGES

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Model Parameters

Models for counseling programs, aimed at preventive and sometimes remedial counseling, have been proposed by Gazda, (1978), and Van Hersteran, (1978). Wolf and Dameron, (1975), compared and contrasted the counseling models in two and four year colleges respectively and an analysis revealed that in the two year colleges, counselors spend more time in academic rather than in personal-social counseling. Perusal of further literature reveals a bolder tone in Older's (1974) study, which aims more at crisis prevention measures. He elaborates that the focus should be not only on the student but on the university environment as well. He porposes a shift in intervention models in colleges from a sickness model to a crash model, which is basically a preventive strategy and which aims towards making the university a safer place for the students. Another model proposed by Glenner (1976), discusses intrusive counseling and proposes faculty to be vested with counseling powers. This model actually met with a lot of success and results showed that fewer students dropped courses and yet fewer were seen at the psychology clinic.

Higher education, the world over is definitely an enterprise which displays tremendous scope and diversity. India, the largest democracy in the world and one of the now leading third world nations expresses a great deal of concern at the growing enrollment statistics and at the corresponding conditions and expectations of higher education. A look at the U.S. Chronicle of Higher Education 1984, reveals that within the U.S.A., the colleges and universities in their entirity enroll more than 12 million students. Educational practices and technology have changed with computer assisted instruction, stimulating case-study based learning, self paced instruction, and other innovative classroom teaching aids. Interactive language laboratories have also come up in most major universities of the world.

The Need for Intervention Strategies

When we observe the student's college behavior, a number of variables come into focus...the social psychological and cognitive listings of the student, the ever dynamic college system with its teaching aids, teachers and their personality variables, the evaluative trends, the trends of peer influence, the administrative machinery and the final outcome variables of the student-teacher growth and well being. There has to be an indepth analyses in each of the above mentioned variables to afford us insight into the efficacy of any educational system. The ultimate positive outcome of the educational system would obviously be a mutual learning process between the teachers and the students, and minimal student and teacher burn out.

Before the development of an eclectic model for crisis intervention among students can be achieved, there is a need to look at the enrollment pattern of students. This would give us a definite idea of the kind of students who come for higher education and also why they come for it. As regards the U.S., higher education statistics reveal that every one in 30 of the freshmen have delayed entry to college after high school, more than 2 in 5 undergraduates attend college part-time, and a warning tone that only half of the students who start college with the intention of getting a bachelor's degree actually attain this goal. A look at Indian universities and at Indian institutes imparting technical know how reveal greater student interest in faculty evaluation; in providing direct feedback to the teachers and the administration about curriculum relevance and teacher competency skills; taking interest in general courses also rather than being completely preoccupied with just the structured major courses of specialization.

These above mentioned variables could well be assessed as signs of students beginning to assess the educational process and their sensitive relation to it. There has been a tremendous spurt in college enrollment in India, in keeping with the continued rise in population and this spurt also sees a slight lowering of student enrollment in the general programs of arts and sciences, but a consequent enhanced enrollment for occupational degrees.

A Point of Concern

Apart from the positive consequences of wanting 'education for all,' there are growing signs of concern within the Indian academic milieu, as large numbers from disadvantaged sections of the society are being made to enter the race and due to the often prevalent low standards in their early education and stimulation, the disadvantaged sections find it difficult to cope with the academic load. With the ever increasing hike in population statistics the number of students constituting 'the to be enrolled' figure is extremely high. Usually entrance examinations or reservation quotas facilitate the entry of regular students and the disadvantaged sections respectively. The large numbers seeking admission often induce feelings of competition and threat which continue long after absorption. This cumulative stress can often hamper student involvement and student performance!

Student Involvement Measures

Discussing the general parameters that should characterize an adult education program, the concept of student involvement leaps to.the eye. This interprets itself as the measure of satisfaction the student derives from the learning process, and the interaction, between the students and the teachers, and between the students and the broader academic boundaries of the college. The students lack of involvement can have manifestations like:

-poor academic performance
-little participation in institutional life
-lowered attendance in class
-have little or no contact with seniors
-have little or no contact with teachers
-display symptoms of drug addiction, alcoholism, and suicidal attempts

Sensing the dynamics at play in the college system, an universal sentiment is expressed by Alexander Austin (1984) from the University of California at Los Angeles....

> "All colleges should offer a systematic program of guidance and advisement that involves students from matriculation through graduation. Student affairs personnel, peer counselors, faculty, and administrators should all partipate in this system on a continuing basis..."

Emphasizing the importance of counseling systems within colleges Blocker, Plummer and Richardson (1965) report..."financial problems, a lack of clear educational and vocational goals, work conflicts, unrealistic aspirations, and similar conditions require the efforts of a trained counselor!" Higgins and Thurstone (1966) had commented with far-sight..."Our work with students need to be in groups. With tomorrow's enrollments and tomorrow's staff shortages where will there be time to see students on one-to-one basis?"

A Model Proposed

A crisis preventive and remedial model is introduced and the model aims to take into consideration factors like student's entry behavior, group intervention strategy by any resource available...faculty, peer or trained counselors, and a quick recognition of concern causing student behavior. The model purports to utilize an array of preventive and remedial measures. Literature perusal reveals lowered student casualities if intensive efforts are made in the first year of college to inculcate factors like involvement and interaction within the student. The proposed model tries to involve variables prevalent in the first year of college and aims at a more comfortable adjustment of the student to the college milieu.

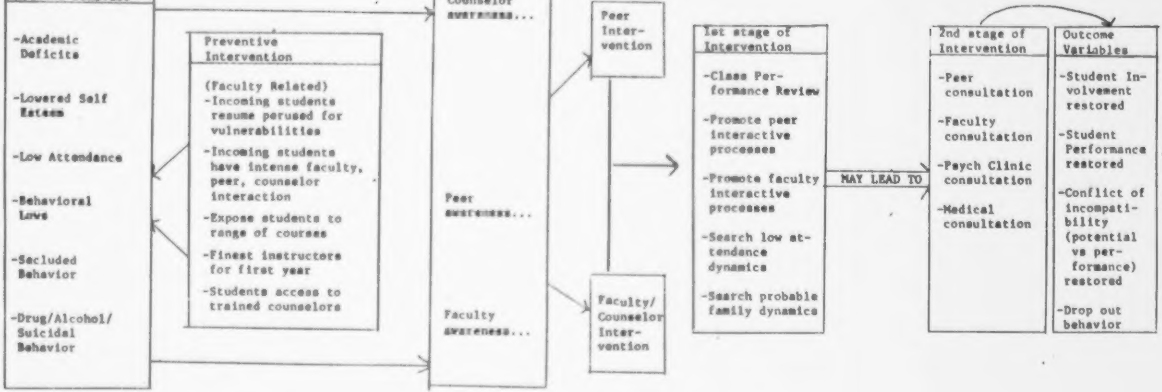
Student Behavior
-Academic Deficits
-Lowered Self Esteem
-Low Attendance
-Behavioral Lows
-Secluded Behavior
-Drug/Alcohol/Suicidal Behavior
Preventive Intervention
(Faculty Related)
-Incoming students resume perused for vulnerabilities
-Incoming students have intense faculty, peer, counselor interaction
-Expose students to range of courses
-Finest instructors for first year
-Students access to trained counselors
Counselor awareness...
Peer awareness...
Faculty awareness...
Peer Intervention
Faculty/Counselor Intervention
1st stage of Intervention
-Class Performance Review
-Promote peer interactive processes
-Promote faculty interactive processes
-Search low attendance dynamics
-Search probable family dynamics
MAY LEAD TO
2nd stage of Intervention
-Peer consultation
-Faculty consultation
-Psych Clinic consultation
-Medical consultation
Outcome Variables
-Student Involvement restored
-Student Performance restored
-Conflict of incompatibility (potential vs performance) restored
-Drop out behavior

FIG. 1

A Preventive and Remedial Intervention Model

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THE PROBLEM OF ADMITTING SOCIALLY BACKWARD STUDENTS IN ELITE INSTITUTIONS

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The Background

There is perhaps no country in the world where social disparities are enshrined by custom and religion as systematically and as rigidly as they are in India. The caste system has been in vogue for thousands of years and finds sanction even in such hallowed sacred texts as the Bhagavad Gita.

The Scheduled Caste, as the untouchables are officially designated, constitute about 15% of the population. Their traditional occupations, which have been handed down from father to son for centuries, are generally in dirty trades like scavenging, handling of dead animals, leather, fishing, etc. Through systematic discrimination over a period of centuries, by denial of all educational opportunities, these people rgressed to such an extent that their capacity for higher trades and studies was severely curtailed. As of to-day, they are not in a position to compete on equal terms with the other communities.

The Reservation Policy

For the above mentioned reasons, the Government of India has, by a Constitutional edict, enforced that a portion of seats be reserved in educational institutions and in Government appointments. In this, they are joined with what are called Scheduled Tribes, almost entirely residents of hilly areas and who also missed the march of civilisation. They also suffer from generations of neglect and missed opporunities. This system of reservation has now been extended to cover many other communities identified as backward and it is not unusual to find in some State Governments and State Universities as much as 70% of the vacancies reserved on a communal basis. As those candidates who qualify under the merit list are not counted towards the reservation quota, effectively, the share available to the so-called forward communities is less than what they may expect according to their share of the population.

Admission in an Elite Institution

The Indian Institutes of Technology are five in number and have been established by a special act of Parliament as Institutions of national importance. These are highly prestigeous elite institutions, attracting the most talented students from a relatively upper strata of the society. All the IITs together admit around 1600 students at the undergraduate level and a slightly larger figure at the graduate level. The admission to the undergraduate course is through a Joint Entrance Examination, in English, Mathematics, Physics and Chemistry. Over 60,000 young aspirants appear for this examination and hence the success rate is barely 2%. The examination is an exceptionally difficult one and the marks obtained by the successful candidates tend to vary between 80 to 40%. However, for the Scheduled Caste and Scheduled Tribe students, for whom 22.5% of the seats are reserved, the qualifying mark is two-thirds of the marks obtained by the lowest listed candidate among the regular students. It is not unusual for the Minister for Education in Delhi to apply an additional moderation, sometimes going down to 60 or even 50% of the lowest level for the regular students.

The Problem of Social Justice

In spite of all these handicaps provided, the IITs have not found it possible to fill even a moderate fraction of the seats reserved for these students. Typically, in IIT-Madras, for a total of about 60 reserved seats, barely a dozen get filled. That is, only a dozen are able to get past even these lowest standards. Because only such a small fraction get through, they opt for, and can get admission to the most prestigeous branches of study. It is, therefore, not unusual to find a class, where the lowest student amongst the regular students has some 65% marks in the entrance examination, whereas for these reserved seats, some with as little as 20% get admitted.

This results in two problems: First, there is immense political pressure to fill more seats somehow or other; second, those admitted find the competition excruciatingly painful.

The politician's criticism of the admission procedure rests on two grounds: Firstly, he asks, 'How is it impossible to find even 200 qualified candidates among a population of over 100 million to join the IITs!' Secondly, he argues that the entrance examination is not a qualifying examination, but an elimination examination. Stated this way, the case against the IITs look black indeed; but, the quality of school education available to these students is so atrociously poor that there is no way these students can cope with the standards of IITs and no possibility of rectifying 12 years of such bad education even if the admission standards are lowered still further.

Taking the first rhetorical question first, the real problem is that few students from these Scheduled Communities actually attempt the entrance examination. Actually, there is no need for them to join the IITs for the following reasons:

1. Their employment opportunities are entirely in the Government sector, where the criterion is often the grades obtained in the qualifying degree examination. As it is easier to get better grades in the less prestigeous institutions than in the IITs, it is professionally advantageous for them to study in the smaller colleges than in the IITs.

2. To join the IITs, a candidate has to write both his high school examination and the entrance examination. However, for admission to other engineering colleges, often the sole criterion is the high school marks. A weak student, therefore, tries to concentrate on doing well in one examination, rather than attempt two.

In view of the above, any student from the Scheduled Communities who wants to optimise his chances for a successful career would avoid joining the IITs. In consequence, while the very best of the rgular student attempt the entrance examination, mostly those who are not confident of making even the smaller engineering colleges try to get into the IITs. Thus, we get the best from the better group and a lower set from the inferior group attempting the entrance examination.

This problem is exacerbated by an operational difficulty. As already indicated, the candidates who are admitted, often obtain barely some 20% marks in the entrance examination.

Alternate criteria of backwardness

Since it has become impossible to bridge this gap even after three decades, some political leaders have gone to the extent of saying that the standards of the IITs are too high and that what is needed is not an international standard of instruction, but an Indian standard of instruction. This raises the fundamental question, whether, just because a group of people cannot cope with a certain level of education, they should have the veto power to deny such an education to the rest; whether social justice should imply that there shall be no institution at all in the country, where merit shall be the criterion and also while the socially-deprived should have special privileges, the talented need have no rights of their own.

These are debatable issues; however, one cannot go to the other extreme and assert that no student deserves any help to compensate for his handicapped background. However, it may not be correct to treat birth alone as the criterion to determine backwardness. Neither caste in India nor ethnic origin elsewhere can be a sole measure to determine who should or should not get a helping hand. An attempt has been made in this paper to develop an alternative indicator to identify and alleviate handicaps more equitably. It is also suggested that any such indicator of backwardness should satisfy the following criteria:

1. Equity: It should not exclude those who are truly backward nor include those who are truly advanced.

2. Clarity: The criterion should be clear and distinct and should not be subject to dispute of errors of evaluation and interpretation.

3. Self-adjustability: The criterion should be able to reflect the changes that are taking place in the society and reclassify groups as and when necessary.

4. Stability: Notwithstanding whatever may happen under the above requirement of dynamic response, the criterion should not cause such rapid changes that it leads to confusion, uncertainty and consequent instability.

5. Sensitivity: Backwardness generally comes in varying degrees and people cannot be simply partitioned into two compartments -- backward and forward. Ideally, any backwardness criterion chosen should reflect not only backwardness but several levels of backwardness.

6. Multi-dimensionality: People's needs are many, education and job opportunities being the most significant in the present context. There could be many others, such as housing, political representation, etc. A single criterion may or may not be satisfactory for all categories. Hence, the indicators may be multi-dimensional and adjustable to meet the speicific needs of a particular situation.

7. Appropriateness: The criteria of backwardness should be relevant to the purpose for which the backwardness is to be corrected. For example, the backwardness criteria for business acumen cannot be the same as for medical skills and neither of these can indicate backwardness in musical ability.

Appropriateness of caste or economic status

One may check the appropriateness of the two criteria that have been commonly talked about, namely (a) caste and

(b) economic status. The extent these two criteria satisfy the seven qualifications listed above is indicated in Table I. In general, it may be noted that neither criterion is really satisfactory in all respects. The economic criteria, particularly, is liable to gross abuse and may also lead to interminable disputes. There is a finality about caste, whereas the economic criterion has to be evaluated and measured each time and for each individual case. Also, the economic criteria themselves cannot be clearcut. A monetary value, reasonable in a city, can be totally unfair in a village. Moreover, there is no satisfactory way of measuring perquisites, inhered wealth, etc. In consequence, not only didputes, but corruption will proliferate. There are enough false certificates going around about caste; there is no point in adding to this kind of corruption.

Two fresh alternatives suggested here are (a) parental education and (b) parental occupation.

Parental Education

It is common observation that education tends to run in families. Children of doctors tend to go in for medicine, those of engineers for engineering, etc. At any rate, those born outside professionally trained families, do start with appreciable handicaps. In this respect, the caste hierarchy is hardly a valid criterion.

In North India, the Kayasthas, although deemed Sudras, are more advanced than many Brahmin communities. Even within a given caste, both in the advanced and in backward ones, there are wide variations in development from family to family. On the other hand, children of educated parents invariably enjoy advantages and those of uneducated parents generally remain handicapped irrespective of caste. Relatively, even wealth provides only a marginal help -- the children of the rich rarely come out on top -- they possibly have too many distractions. For these reasons, parental education level is proposed as an appropriate indicator of the inherent handicaps suffered by a child in its attempt to study.

Similarly, the level and type of parental occupation can make a significant contribution to the prospects a child may have. Hence, parental occupation may be used as another useful indicator of the help a child needs to equalise opportunities.

It might be noted that both parental education and occupation level satisfy all the criteria of equity, clarify, stability, self-adjustability and sensitivity and even appropriateness stated above. Equity, because they clearly isolate the backward from the forward without mixing the two. Clarity because these criteria are clearcut and unambiguous. Highly stable, because parental education almost never changes and occupational level only rarely. Dynamic, as changes in family status are immediately accounted for. They are also sensitive because either criteria can easily distinguish a number of levels of attainment.

Bonus Points

Specifically, as far as educational opportunities are concerned, one might consider, as given in Table II, ten levels of deprivation on the basis of parental educational attainment and one may, in addition, have ten levels of aspiration. These may be used to determine the amount of support to be given or penalty to be imposed -- children aspiring to a higher level of education than their parents getting an appropriate bonus, while a penalty is imposed on those attempting a lower level of education than their parents. More sophisticated, quantitative measures may also be used, if considered desirable.

For example, as indicated in Table III, children of a middle school level parents trying to join a B.A. course will get a bonus of four points, whereas those of a foreign educated parent will bear a penalty of three points. Similarly, children of illiterate parents will get seven points bonus to study in a professional institution, whereas those of a foreign trained parent will suffer a penalty of two points. These differentials may be used to provide a suitable weightage to the weaker section children.

If the idea of penalty points is not acceptable psychologically -- although there is no reason why one should mind it considering the actual handicaps borne by the underprivileged children -- the alternative of having only differential bonus points may be considered. Here, all get bonus points, the underprivileged getting more than the privileged. Such an example also is worked in Table III. Effectively there is no difference between the two, but there may be better psychological acceptance if only bonus points are used. These examples have been given only to show what educational indicators can provide. However, graded differential and finer distinctions can be worked as required.

Similar penalty/bonus points may be evolved for parental occupations also. This depends on the sociological conditions in the country. In India, for instance, a child of a Central Government official has certain advantages over another whose parents are not in the Central Government. Also, the weightage to be given to parental education and parental occupation needs to be determined.

It is postulated that a systematic and objetive system of handicap points developed along these lines will be more appropriate and less discriminatory than one depending purely on birth. It can also provide a quantitative measure for the degree to which handicaps could be provided without detriment to the standards of the institution or imposing an unbearable strain on the student.

TABLE I

S.No.	Quality	Caste Criterion	Economic Criterion
1.	Equity	Does not satisfy. The underprivileged among the forward are excluded and the well-provided among the backward get included. Also, does not cater to non-Hindus.	Satisfactory
2.	Clarity	Generally clear when gross divisions are made; but when subtle distinctions between sub-sub-castes are sought, the picture gets murky.	Confusing. Economic well-being has too many dimensions, e.g., (a) income in city is not comparable to that in a remote village, (b) subsidiary sources like property or family liabilities difficult to quantify; (c) perquisites/cost of keeping the job not qunatifiable. Also, while caste is a clearcut distinction, economic level is a continuous variable, varying both in quality and what is more with time.
3.	Self-adjustability	No, does not respond to changing environment, as caste is a permanent characteristic.	Satisfies.
4.	Stability	Yes. No fluctuations.	No, highly variable
5.	Sensitivity	No. Caste is too lumpy and characteristic to be sensitive to subtle variations.	Yes.
6.	Multi-dimensionality	Generally does not satisfy.	Generally no
7.	Relevance	Possibly at macrolevel; at Microlevel - No	Moderately

TABLE II

Graded differentials for Equalisation of Educational Opportunites

Parental Educational Level		Aspiration Level
Illiterate	10	Foreign Education
Elementary School	9	Ph.D.
Middle School	8	Professional/Master's
Tenth Standard	7	Bachelor's
Higher Secondary	6	Post-Higher Secondary
Post-Higher Secondary	5	Higher Secondary
Bachelor's	4	Tenth Standard
Professional/Master's	3	Middle School
Ph.D.	2	Elementary School
Foreign Educated	1	Illiterate

TABLE III

Typical Mothods for calculating bonus/penalty points

Model A: Bonus Points = Parental education level minus child's education level

(a) Parental Education Level	Middle	4 Points
(b) Child's Aspiration Level	B.A.	8 Points
c) Bonus/Penalty Points	Bonus	4 Points

Model B: Bonus Points = Parental education level plus child's aspiration level

	Case I		Case II	
Parental Level	Illiterate	10 Points	Foreign Education	1 Point
Aspiration Level	Professional Course	8 Points	Professional Course	8 Points
Bonus		18 points		9 Points

A STUDY OF THE LEARNING EXPERIENCES OF AT-RISK AND REGULARLY ADMITTED COLLEGE STUDENTS

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Each year since 1981 Montclair State College has admitted 90 freshmen whose academic qualifications were below the standard for regular admission to the College. This group of students constitutes less than ten percent of the freshman class, and is composed mainly of blacks and Hispanics whose Scholastic Aptitude Test scores or class rank were insufficient for regular admission but who showed promise as college candidates based on less quantifiable criteria, such as teacher recommendation. To address their needs and try to insure them some measure of academic success, the Special Tutorial Program (STP) was developed, providing academic, tutorial, and counseling services.

In June 1985 the first group of STP students will graduate. This study was undertaken to learn about their learning experiences before they leave the College, and to examine the learning experiences of STP students who are sophomores and juniors. The study focuses on students' perceptions of their development as learners and their assessment of effective learning settings and teaching approaches. Since the number of students with academic deficits is sizable judging by the burgeoning of study skill courses at academically sound institutions (Johnson, 1983), it is hoped that the findings from this inquiry will reveal how at-risk students perceive of learning and teaching and that these findings will have application at colleges with a comparable student component. As only half of the students who begin college attain a degree (Fiske, 1984), it may be that some attrition is due to negative college learning experiences. If students have more realistic expectations of college learning and instruction, perhaps the retention rate of students will increase.

Method

To learn how academically disadvantaged students perceived their learning experiences from the vantage point of passing their freshman year or more, a questionnaire was developed consisting of fixed-alternative, scale, and open-ended items. About 25 percent or 47 of the 190 students returned the questionnaires which were marked "confidential." A group of 38 regularly admitted sophomores, juniors, and seniors, constituting a comparison group, also completed the questionnaire.

When STP students were freshmen, they were asked what they found hard about school and studying. Categories of responses developed from a content analysis of these data (MacDonald, 1981). These categories appeared as items in the questionnaire of this study. Students were asked to identify if an item was a problem as a freshman, and rate the degree of improvement.

There are more similarities than differences in how the two groups of students responded (see Table 1). Both groups cited "reading uninteresting material" most frequently, with 74 percent of the STP and 87 percent of the comparison group indicating this as a problem. For both groups, more than half indicated improvement. Both responded similarly to "budgeting time" as STP students chose it as the second most frequent problem and the comparison group ranked it third. However, the improvement rate is higher for the comparison group than for STP students. There was a similarity in the type of category each group chose as least difficult: for the STP students, "taking notes from readings" (19 percent) and for the comparison group, "taking notes in class" (18 percent). Yet this item received the highest improvement rating from the STP group as 22 percent cited it as much improved and 78 percent as improved. However, 42 percent of the comparison group found this item a problem, and in fact 68 percent gave it only a "slightly" to "not improved" rating.

Table 1
Problems as Freshmen and Improvement Rating*

Problems	STP	% Imp. Rate	(N=47)	Comp.	% Imp. Rate	(N=39)
Comprehending unfamiliar reading material	51%	8	4	67%	17	4
		58	3		33	3
		34	2		50	2
		0	1		0	1
Reading uninteresting material	74%	11	4	87%	6	4
		43	3		55	3
		40	2		27	2
		6	1		12	1
Reading for long periods of time	53%	8	4	61%	17	4
		52	3		48	3
		32	2		26	2
		8	1		9	1
Writing term papers	67%	23	4	36%	23	4
		59	3		54	3
		5	2		23	2
		13	1		0	1
Writing essays	30%	21	4	41%	18	4
		29	3		62	3
		43	2		18	2
		7	1		0	1
Getting started to write	67%	0	4	53%	20	4
		64	3		55	3
		32	2		20	2
		4	1		5	1
Organizing ideas	43%	5	4	67%	11	4
		70	3		83	3
		25	2		6	2
		0	1		0	1
Taking notes in class	30%	21	4	18%	42	4
		50	3		29	3
		29	2		29	2
		0	1		0	1
Taking notes from readings	19%	22	4	42%	6	4
		78	3		25	3
		0	2		50	2
		0	1		19	1
Taking tests	53%	8	4	61%	7	4
		36	3		50	3
		48	2		26	2
		8	1		17	1
Feeling motivated to work; using self-discipline	51%	18	4	74%	21	4
		50	3		47	3
		20	2		25	2
		12	1		7	1
Budgeting time; being organized	62%	17	4	68%	23	4
		41	3		50	3
		28	2		23	2
		14	1		4	1

*Rating scale: 4=much improved; 3=improved; 2=slightly improved; 1=not improved.

It is of interest to note that the comparison group has somewhat higher percentages of problems than the STP group, suggesting that students in this group might have more of an awareness of their limitations than STP students.

Students were asked what they have become better at and what remains difficult for them. For both groups, comments of improvement exceeded problems. Responses to the question of what they have become better at fell into three categories: college work, social life, and communication skills. The following are some of the responses:

> Studying in advance for tests, keeping up with class material...Having more discipline and organizing my time...Understanding what the teacher wants and expects...Going to class.
>
> Getting along with people...Relating to others...Improving my study habits and saving time for my social life...Being more independent.
>
> I have become better at communicating my ideas...Talking to a group of people...Communicating with teachers, classmates and friends... I tend to be less afraid to state my true feelings in public.

There were no substantive differences between groups in how they answered the questions. Student responses to the question, "What remains difficult?" were not different from those originally expressed as freshmen and listed in Table 1.

Table 2 contains student responses to questions concerning classroom behavior and learning. Thirty-eight percent of STP students participated in class frequently, 50 percent occasionally, and 12 percent rarely. Comparison group participation was 43 percent frequently, 54 percent occasionally, and three percent rarely, and represents a similar pattern to STP students except that only three percent of the comparison group rarely participates. Both groups clearly prefer more class discussion as 72 percent of STP responses in the affirmative and 76 percent of the comparison group demonstrate. It is of interest to note that in both groups the majority of students participated only occasionally, but seem to prefer the opportunity for greater participation as indicated by their clear preference for more discussions. Unlike the comparison

Table 2

	STP Group		Comparison Group	
	f	%	f	%
Class participation:				
Frequently	18	38	15	43
Occasionally	23	49	19	54
Rarely	5	11	1	3
Preference for more class discussions:				
Prefer	34	72	30	76
Do not prefer	13	28	9	24
Most effective learning setting:*				
Lectures	15	32	10	26
Discussions	23	49	24	62
Small groups	20	43	7	18
All of the above	9	19	7	18
Emphasis in class on:*				
Memorizing facts	24	51	23	59
Thinking logically	35	74	25	64
Developing ideas	16	34	17	43
Sharing ideas	13	27	15	38
Other			1	2
Getting out of college thus far:				
Learning new information	19	40	19	49
Thinking critically	18	38	13	33
Learning how to survive/succeed	8	17	7	18
All of the above	7	15	7	18

*Percentages exceed 100 because more than one item was checked.

group, the STP group favored small group settings almost as much as discussions.

Students could choose more than one response to the question of what was most emphasized in their classes: memorizing facts, thinking logically, developing ideas, sharing ideas, or "other." As Table 2 indicates, both groups perceived of thinking logically as the primary thrust in courses, with 74 percent and 64 percent of the STP group and comparison group, respectively, citing that category. Both groups chose memorizing facts as the second emphasis, with STP students citing this category 51 percent and the comparison group, 57 percent. Developing and sharing ideas were cited less for both groups.

Students could choose more than one response to the question, "What do you think you are getting out of your education thus far: learning new information, thinking more critically, learning to succeed/survive at college," and they could add other responses. Again the groups resembled each other, as 49 percent of STP students and 40 percent of the comparison group chose "new information" and about 33 percent of each group chose "thinking more critically." Fifteen percent of STP chose all factors as did 18 percent of the comparison group, and a similar percentage of students mentioned learning how to succeed/survive at college.

To learn how students felt about college instruction, students were asked to describe characteristics of good teaching. This open-ended question was intended to elicit student interpretation, and students responded by giving affective characteristics of a good teacher and descriptions of effective teaching behavior. Characteristics which were gleaned from both groups included being empathic, friendly, willing to listen, patient, open-minded, fair and respectful. Examples of effective teaching behavior given by STP students are:

> Explain clearly (listed six times)...The best teachers encourage participation, had class discussions, and were not intimidating... A good teacher is one that could give an interesting lecture and also involve the class in a group discussion...Well organized and

> well prepared...Enthusiastic and uses interesting materials...Shares personal experiences that are related to class material.

Comparison group comments were:

> Explain clearly (listed twice)...Use good examples...The teacher tries to generate discussion; they don't just lecture...Precise, concise and to the point...A teacher that blends humor, insight, knowledge and encouragement to like the course is tops with me.

Both groups seemed to favor clarity and being well organized as teaching behaviors, qualities a recent study on teaching found to be important to students (Van Rossum & Deijkers, 1984).

Students were asked how well their high schools prepared them for college, and as the data in Table 3 indicate, both groups rated their preparation from good to excellent. This evaluation is at odds with reported findings of high school preparation by outside examiners ("Newspaper Reaction," 1983), but it is similar to the findings in a recent self-assessment study (Donaldson, 1984).

Seventy-seven percent of STP students rated English preparation from good to excellent, and 68 percent of them gave math preparation that rating. It seems that this group, who as freshmen were required to take special courses in these subjects, did not blame their high school preparation for this condition.

Table 3
Assessment of High School Preparation

	Poor				Satisfactory				Good				Very Good				Excellent			
	STP		Comp.		STP		Comp.		STP		Comp.		STP		Comp.		STP		Comp.	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
English	0	0	1	3	6	13	5	13	18	38	6	15	14	30	12	31	9	19	15	38
History	3	6	2	5	11	24	6	15	20	43	11	28	10	21	16	41	3	6	4	11
Math	5	11	8	21	10	21	10	25	12	25	11	28	15	32	4	11	5	11	6	15
Science	2	4	5	12	18	38	13	33	14	30	8	20	9	19	9	24	4	9	4	11

When students were asked about advice they would give freshmen, STP comments focused on the imperatives of using time wisely, not getting discouraged, studying first and "partying" second. The comparison group made similar comments but included more general and differently focused advice.

> Try to be friendly and be yourself..Get to know people and enjoy school...Meet and talk with people...Get involved in class and out...Don't declare a major first--take courses in different fields.

When students responded to the question of high school recommendations, some answered as if they were addressing the students and others the administration. More than half of the STP responses were "take college prep courses" and the other focus of their answers was on writing practice in high school. The comparison group's responses included other ideas, such as:

> Take psychology and sociology rather than regular subjects like math and science...Prepare students for the change in responsibility to oneself...Teach students how to study...Treat them as young adults rather than like children.

Recommendations for college improvement included:

> Screen professors...Get rid of the bureaucracy...Less emphasis on tests and more on learning...Make teachers be more available to students...Students should have more involvement in how decisions that affect us are made.

Students were asked what they valued that happened to them at college: developing friendships, thinking independently, developing a different perspective, getting good grades, all of these, or "other." For both groups, "thinking independently" was the main category they chose (see Table 4). It is of interest that the comparison group chose "good grades" more than STP students.

Table 4

	Friendships		Think. Ind.		Diff. Pers.		Good Grades		All	
	f	%	f	%	f	%	f	%	f	%
STP	18	38	23	49	19	40	9	19	9	19
Comparison Group	23	58	27	69	23	58	16	41	3	6

Comments in the category "other" concerned valuing maturity and independence and did not only reflect the view of seniors:

> I've grown up so much, and now I know the meaning of responsibility... I've learned to take care of myself and run my life...Increase in self-confidence based on hard work and achievement...I have developed my sense of self...I love being on my own...More aware of my values.

Discussion

It is evident that these groups of at-risk and regularly admitted students are more alike than they are different. They experienced common problems as freshmen and overcame them at a similar rate. A main difference between the groups is that the comparison group responded to open-ended questions from a wider perspective, and STP students interpreted the questions more literally.

What is of interest in this study are the students' common perceptions about college and learning. They have a strong preference for active learning or learning through participation and discussion. This information could have an impact on how we teach as we may, by lecturing without discussion, contribute to the student passivity that we say we deplore.

That students found thinking logically emphasized over memorization of facts should be heartening to faculty. The fact that students rated thinking and learning more important than succeeding at college suggests they valued what they learned more than the grades they received.

Student recommendations to freshmen* could be utilized for incoming students, and as verbatim quotations may have an authenticity that advice from college personnel lacks. While there are many reasons to explain the fact that half of entering college students do not get their degree, a possible cause may be the disjuncture between their expectations and the realities of college. Prospective students of all academic backgrounds may be less at risk if they know they are not alone in contending with unanticipated problems. The most likely informers would seem to be the college students whose descriptions of the hardships of starting college and the satisfactions in maturing may be of use to students, faculty and administrators.

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*Not all recommendations were included in this paper.

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TEACHING LEARNING AND THINKING

FRIDAY, 5 JULY

0830 - 1000

IMPROVING THE ABILITY
TO STUDY OF ENGINEERING STUDENTS

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1. The Programme

The Technical University (RWTH), Aachen, is a university with about 35,000 students. Most of them are students of engineering. Their activity of studying can be seen as a complex set of actions. Etminan and Heger (1984), using ideas from Leontjew (1973) and others, consider these actions as the central strand in a three-stranded structure of studying (Fig. 1).

The three strands are:

I Being a Student: the subjective elements of studying, i.e. the student as a person

II Context of Studying: the objective elements of studying, i.e. the university as an institution

III Actions of Studying: the student's actions under the influence of personality traits (I) and external demands (II), i.e. study strategies.

Four arrows of influence and impact link these strands with each other. From the diagram it can be seen that the actions of studying

- are controlled by the student, e.g. on the basis of his/her personality traits (arrow 1)
- are internally represented in the person of the student, as a basis for action (arrow 2)
- influence the institutional context of studying, e.g. the students can influence the university through individual criticism or through the Students' Union etc. (arrow 3)
- are under the impact of this institutional context e.g. the student has to respond to the demands or expectations of the university (arrow 4)

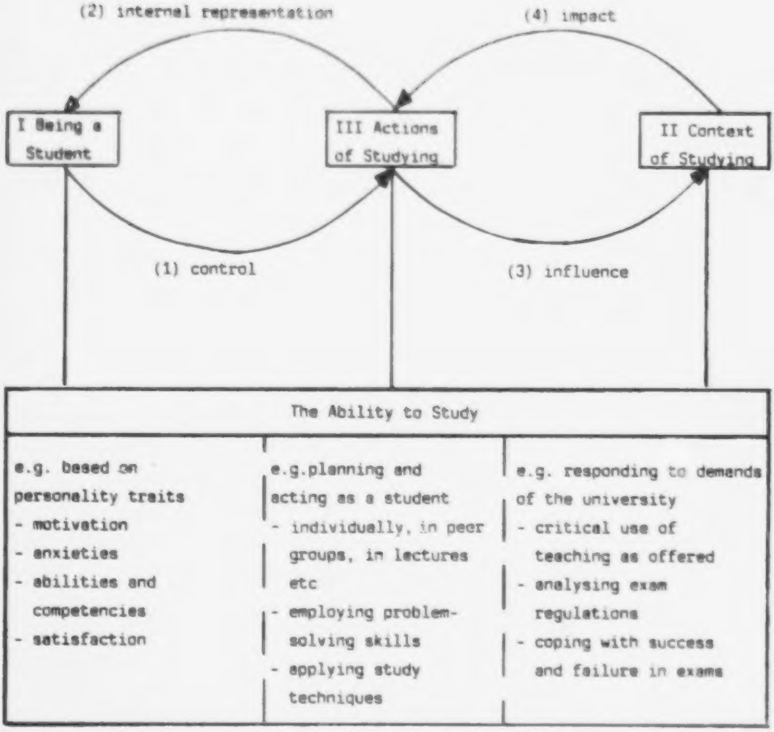
Because of the interaction between these strands, it is obvious that we need to consider all three strands if we wish to improve the student's ability to study. This broad aim includes fairly divergent subgoals like enhancing personal satisfaction (strand I), developing group work skills (strand III), coping with failure in exams (strand II) etc. A programme designed to achieve this overall aim would need to be comprehensive. The courses usually offered by centres like ours concentrate on a single element or a group of related elements, with particular emphasis on the person of the student (I), the context of studying (II), or the actions of studying (III). However, even though elements from a single strand are usually emphasized, those from other strands may be included as well.

We think it necessary to see all these different courses and their elements as parts of a single integrated approach to improving the ability to study. Among other elements, a programme may comprise

- courses on study skills and study habits
- courses on oral and written communication, cooperation, working in a group etc.
- courses on problem-solving skills

This programme focuses on the students' actions of studying and arrows 1-3 in Fig. 1. It has little effect on arrow 4 which symbolizes the impact of the context of studying on the actions of studying. As we use the term, the context of studying includes the process of teaching. In our view, staff development programmes aimed at improving teaching, and programmes to improve the students' ability to study, should be seen as integrated into a comprehensive approach to improve teaching and learning.

In the following section, we describe a course on problem-solving as an example of how approaches to improve teaching and learning can be linked. The


(2) internal representation
(4) impact
I Being a Student
III Actions of Studying
II Context of Studying
(1) control
(3) influence

The Ability to Study		
e.g. based on personality traits - motivation - anxieties - abilities and competencies - satisfaction	e.g.planning and acting as a student - individually, in peer groups, in lectures etc - employing problem-solving skills - applying study techniques	e.g. responding to demands of the university - critical use of teaching as offered - analysing exam regulations - coping with success and failure in exams

Fig. 1: Some elements of the ability to study

course was introduced as entirely student-oriented with staff of our centre teaching engineering students the skills needed to solve engineering problems efficiently. It is now our aim to make our colleagues, the teaching staff of the engineering departments, acquainted with approaches to problem-solving so that they in turn can integrate these approaches into their teaching. Hence, improving problem-solving skills is part of both our staff development programme and our programme to improve the students' ability to study.

2. An Example

The course on problem-solving skills lasts for 2 semesters (12 weeks each) with one 2-hour meeting a week. It is based on what is known about problem solving and related fields (e.g. Woods 1983). The students work through a series of problems which are initially quite general. But later, problems are selected from those which students encounter in their courses in technical subjects. The students try to solve problems by applying strategies which we have made them acquainted with, while they reflect on both the success of the strategies and the value of the results.

Following Simon (1973), we distinguish between well-structured problems, which are the type of problems typically solved by engineering students, and ill-structured problems which are closer to real life. The first half of the course we offer deals with the former kind, the second half with the latter.

The overall strategy of solving a well-structured problem can be represented as an algorithm which encompasses a range of different approaches and methods structured in a series of phases. These phases are used to provide a structure for the course.

The course starts with the phase of

1. Analysis of Present and Desired States (Given/Goal Analysis)

This phase contains the most important questions and answers in determining success or failure since analysis and internalization of the starting conditions may yield the clues for the best attack and the correct solution.

The following phase expects the students to

2. Search for Methods (or Operators) to Solve the Problem

This phase includes using a checklist of approaches:

means-end review
generation of sub-goals
designing graphical representations
translating the problem into a mathematical representation
looking for similar problems solved before
using brainstorming or group discussion
working backward from the solution etc.

The students can adapt this checklist to the special needs of their engineering discipline.

The phase of

3. Evaluation/Decision on Methods (Operators)

can considerably improve the performance of problem solvers if these activities are integrated into the problem-solving process (e.g. Hesse 1979). The result of this phase is an ordered set of methods to reduce the difference between Given and Goal, or between sub-goals.

The phase of

4. Application of Methods (Operators)

proves whether the problem has been solved. It involves an evaluation of the solution in terms of criteria appropriate to its context and it may include assessing the solution according to moral or ethical norms.

If the problem has not been solved using this strategy it may be necessary to try a different strategy - after all, the problem may be one of those which cannot be solved using an algorithm like the one described so far. It may in fact be one of the problems which we have called 'ill-structured'.

Solving ill-structured problems is the theme of the second part of the course. In this section, we ask the students to work as a team on a complex engineering problem - the design of a car in accordance with needs and expectations of present-day society. On the one hand, problems of this kind need a wide range of creative solutions. They involve the consideration of non-technical issues which have to be translated into technical terms. On the other hand, the solution to the problem has to comply with many constraints. Some of the approaches we advocate to create solutions are

brainstorming
attribute-listing
using associations
asking questions
visualization etc.

During the course, the students practise each of these approaches so that they understand what each approach involves.

3. Evaluation

We have designed a series of research activities around our programme of improving the ability to study of engineering students. The methods of investigation used include the analysis of university regulations, exam questions and student records, interview, video-supported classroom observations, tape recorded 'thinking aloud' and student diaries.

Some of the research questions we have asked are listed in this section together with some preliminary research results. In each case, we relate the research to the model of the ability to study presented in Fig. 1. A more detailed discussion of the methodology used is included in our research reports.

I, Being a Student (strand of subjective elements of studying)

What is the relationship between exam results and the students' own perception of their progress and success?

First year students of engineering tend to consider their problems as involving three main areas which are shown in a 2-dimensional summary of a Smallest-Space-Analysis represented in Fig. 2 (Appel 1984). From these results, and others, we can conclude that the students' plans of action are highly orientated towards not failing their exams even if these exams have little relevance to their ultimate professional aims.

II, The Context of Studying (strand of objective elements of studying)

What is the relationship between the formal curriculum and the hidden curriculum for these engineering students?

The overt expectations of the university as they are described in regulations etc, merely refer to intellectual competencies and factual knowledge of the subject matter of engineering. Competencies like communication skills or creativity are never mentioned explicitly. Students, moreover, tend to perceive their courses merely as an endless series of lectures to be listened to and copied down, and of exams to be passed because they have little free time which can be used for non-technical study.

III, Actions of Studying (strand of students' actions under the influence of personality traits (I) and the impact of the university through teaching (II))

What are the students's main study strategies?

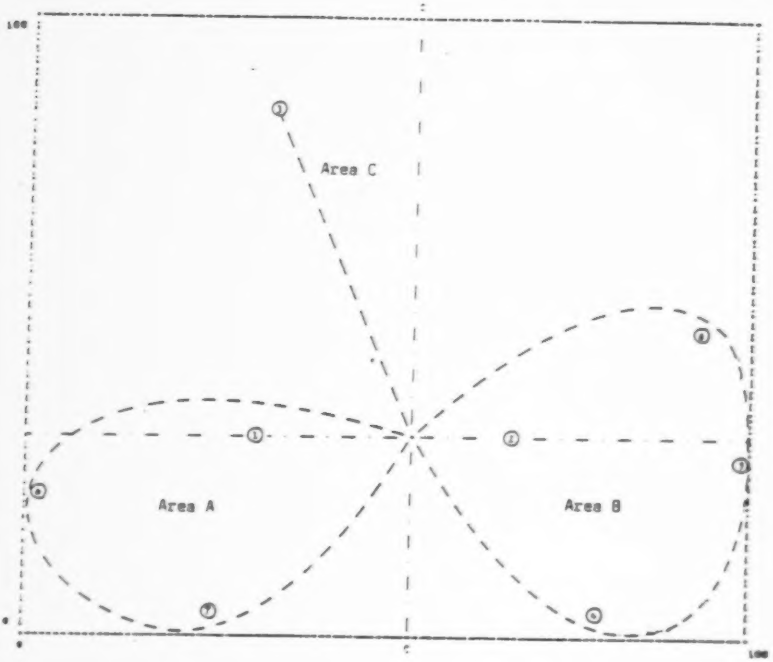


Fig. 2: 2-dimensional SSA-Representation of Problems Perceived by First Year Engineering Students

Area A:
Uncertainty about:
7 the structure of the curriculum and academic regulations
6 their professional future
1 the structure of the university as an institution

Area B:
2 assessment anxiety
8 stress caused by demands of subject
4 isolation, anonymity
5 alienation

Area C:
3 financial uncertainty

On the one hand, students consider the ability to solve problems as the most important attribute for passing exams. On the other hand, lecturers mostly teach problem-solving skills by presenting the correct solution to some selected problems so that the students can copy down the solution. Hence the main study strategy used by engineering students seems to be to learn as many recipes for problem-solving as are needed to pass the exams, without acquiring too much 'unnecessary' knowledge of facts. On the basis of this education, our graduates are well-equipped to cope with certain types of problems. However, they are ill-equipped to deal with many of the complex problems actually faced by today's engineers. Hence, our approach to improving problem-solving skills gains particular importance in view of the demands and expectations of the engineering student's professional future.

We have also attempted a more direct evaluation of the effectiveness of our problem-solving courses in improving the student'sability to study. So far, we have studied several groups of students during the course. However, we have studied only one group some time after the end of the course. During the course, students have shown particular reluctance to make use of approaches different from the one they have been used to - mostly trial-and-error or following recipes. Usually it takes at least five training sessions involving working through the algorithm described and its checklists before the students develop the skill of scanning a variety of approaches and methods as a basis for deciding on how to solve the problem. We have also observed that the students who gain most from the course are those who have had prior experience of university exams, irrespective of whether they have failed or passed. After the course, the students we studied demonstrated in a genuine problem-solving situation that they were by then accustomed to scanning different approaches before deciding which approach to use. We furthermore interviewed students after having passed exams and found that they attributed their success largely to the course.

These preliminary results look quite promising. However, the faculties of engineering at our university may not be willing to decrease the failure rate of undergraduate examinations (at present, the failure rate is between 70 and 90%) because these examinations are the administration's control valve of student intake. It follows that we could very well contribute to making exams even more difficult if large numbers of students who have attended our courses display improved skill in coping with examinations.

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TEACHING CRITICAL THINKING

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One can hardly treat with any degree of adequacy the subject of "Teaching Critical Thinking" in a ten page essay. Yet, even though study of critical thinking has developed slowly since Glaser's 1941 book on the subject, it is now "after a long and halting start, building up a head of steam" (Paul, p. 5), and in a conference such as The Improvement of University Teaching, deserves our attention for discussion. And that is what I propose to do; bring our attention to a description of critical thinking and at least some of its constituent dimensions so that we can use this as a springboard for viewing the subject both critically and comprehensively. To view a given entity both from the critical, i.e., analytical, and the comprehensive points of view is itself to be engaged in critical thinking. So, we will be using the very process of which we speak as a tool to understand the process. Moreover, I do not imply that I can be definitive--not only because of space limitations but also because of my limited knowledge--nor necessarily instructive--for I fully expect some of the discussants to know more than I. I merely plan to suggest some of the central ideas concerning critical thinking and let these serve as a catalyst for discussion which will contribute to greater knowledge of the subject for all participants. Turn now to the discussion: What is critical thinking? What are some of its primary constitutive elements? Can it be taught? If so, how?

What do we mean by Critical Thinking? Frederick Ferre has defined philosophy as "One's way of thinking most comprehensively and critically." (Ferre, p. 14). Webster's Collegiate Thesaurus gives synonyms for "critical" as "discerning," "discriminating," "penetrating," while antonyms are: "cursory," "shallow," and "superficial." To think critically, therefore indicates that one's examination of a particular actuality will be discerning, discriminating, and penetrating rather than cursory, shallow, and superficial. Following this line of description, we could say that one knows an actuality in direct proportion to his ability to make increasingly refined and precise judgments, observations, or descriptions about the actuality in question. And one only does this through critical thinking, a meta-enterprise in that its activity is confined to no discipline and no particular subject matter but is a necessary activity for the knowledge of anything whatsoever. The question then becomes: what can we do as teachers to ensure that we ourselves and our students engage in the critical thinking processes which will lead to knowledge, i.e., to a critical and comprehensive understanding of "X." How can we enhance the possibility and ability to make refined and precise discriminations concerning the actuality under scrutiny?

I have given a general or comprehensive description of Critical Thinking, but if we are to examine the subject according to the general description I have given, then we need to indicate what we mean by critical thinking from a more analytic standpoint. The College Board through its Project Equality indicated a set of guidelines for identifying the parameters of Critical Thinking. The guidelines included the following:

1. The ability to identify and formulate problems, as well as the ability to propose and evaluate ways to solve them.

2. The ability to recognize and use inductive and deductive reasoning and to recognize fallacies in reasoning.

3. The ability to draw reasonable conclusions from information found in various sources, whether written, spoken, tabular, or graphic, and to defend one's conclusions rationally.

4. The ability to comprehend, develop, and use concepts and generalizations.

5. The ability to distinguish between fact and opinion. (Morante, p. 71). It should be noted that the Board indicated that these competencies did not provide a complete description of the task of Critical Thinking, but these do serve to outline the subject while indicating the enormity of the task of teaching critical thinking. The vastness of the task is further indicated by the New Jersey Task Force Taxonomy of Thinking Skills which lists Mental Acts, Cognitive States, Combinations of Mental Acts and Cognitive States, Reasoning Skills, and Inquiry Skills and includes over eighty-three items under these five main headings. (E.L., p. 73), while Lipman in Philosophy for Children listed approximately thirty thinking skills which his program intends to help children develop.

What are some of the things we can do to help students become Critical Thinkers? In discussing this we need to realize that not only the students need to develop thinking skills, but much of what I will describe subsequently--and I suspect what we consider in our discussion--could be the basis for some well-needed teaching teachers how to think critically. One commentator for example, describing Lipman's Philosophy for Children cautioned:

"This program could work outstandingly well with a gifted teacher but fail miserably with a mediocre or below-average teacher who may not be able to engender the attitude of classroom inquiry the program needs. Indeed, some teachers may themselves have trouble with the thinking skills taught by the program." (Sternberg, p. 44).

One useful method for teaching critical thinking and for thinking critically is the phenomenological method. Phenomenology, like the Socratic method, has its roots in philosophy, and it has a two-fold emphasis. First, phenomenology is essentially a descriptive method. Secondly, it is a nonemphirical science, by which is meant that the "essences" which the phenomenological method finally reach are not empirically observable matters of fact. For the purposes of teaching critical thinking, I do not mean that we attempt to teach students the intricacies of the phenomenological method as described by Husserl. We don't even have to call it phenomenology. The important thing is that we help students use the method, which in its simplest form is a descriptive method which attempts a complete, exhaustive description of the phenomenon under consideration in an effort to learn what "it really is" within the framework of that experience. Or, if an idea is being considered, the method wants to find out "what it really means" to do "X" or to say "X." The attempt is to get at the sine qua non of the subject being described, i.e. try to describe the subject in such a way that one will arrive at the central dimension of the subject without which it would not be what it is. In other words, we reflect on "what is it that makes "X" what it is? What is it that without which it would not be what it is?"

To do this, we need to focus on three dimensions of the phenomenological method, namely, the descriptive method, subjective intentionality, and "free imaginative association."

Through a phenomenological description we can get at the underlying experience of "X" and see it not merely on the surface. In thinking phenomenologically we attempt to describe something by temporarily ignoring (stripping away, bracketing) its incidental, accidental, non-essential dimensions. By doing this systematically, we begin to "get at" what is essential about the phenomenon we are describing.

For example, consider the concept "hope." What do I intend by "hope?" First, when I think of hope, I do not intend it to refer to some future state of affairs which I reasonably know has no possibility to happen. Hope is not something which I entertain as a last resort, knowing that all else has failed. It is not "hope against hope." It is not entertaining the possibility of the occurrence of some impossible miracle. It is not something whose object is presently occurring, nor is it from the past. This is probably enough of an example for a picture of the phenomenological method to begin to appear. Through a series of stripping away or bracketing those dimensions which are non-essential or inapplicable from the standpoint of what I intend in the experience, I soon begin to arrive at what the phenomenon in question essentially is. In my example of hope, I can say that hope is some desired and anticipated future event whose occurrence I can, with some reasonable warrant, entertain as happening.

Such a descriptive analysis will never lead to the "ideal," the "transcendental essence" (Husserl) of something. But the description will lead us to a fuller understanding of our subject as we intend it. We can know those characteristics associated with it and indicate whether they are essential to making it what it is as we presently intend it, and others can understand our position and meaning.

A second dimension of phenomenology's descriptive method is "intentionality." What the thinking subject "intends" the object to be is as important in ascertaining its reality as is the facticity of the object. A "chair" is not "just a chair," but it is whatever the intending subject intends it to be, e.g. a ladder to stand on, a weapon, wood for the fire, etc. Phenomenology reminds us that when we experience reality it is not merely what it is. (Teachers looking for the right or wrong answer would do the student and themselves far greater service if they knew what the student intended by the answer, a procedure which would not only make the student think but would also make many "wrong" answers "right.") I once showed my colleague six prints which to me represented various divisions of philosophy, such as ontology, methphysics, logic, ethics, etc., and asked her to identify these. She gave me two "wrong" answers, and thus failed the test. But when I asked her to explain why she reasoned as she did, her "wrong" answers were obviously "right." (Several other experiments produced the same results.) Husserl and others affirm that what the thinking subject intends "X" to be is a greater constituent of its reality than are the factual, empirical dimensions of it.

A third dimension of phenomenology which contributes to critical thinking is Husserl's idea of "free imaginative variation." In using "free imaginative variation," we first have the student to describe an example of something and then alter the description by adding or deleting one of the predicates contained in the description. We can continue this as long as we choose, in each instance asking whether the added or deleted predicate maintains the description of the same kind of object as we originally posited or if it has, by changing the predicate, been changed. This reveals whether the altered predicate was essential or accidental to the object's reality as originally intended.

This will help the student understand that subjective intentionality has a lot to do with what something really is. It will stimulate the student's imagination, help her to think creatively, and make her realize that there is more to reality than the mere mundane facticity which the world places before us. Moreover, it will enable the student to "strip away" unessential characteristics of a phenomena to get to the essential. It will permit the student to formulate a definition of something without the laborious and abstract process of learning and applying the rules of definition from the logic text.

The Socratic method has long been a favorite tool for teaching critical thinking. Yet, one recent commentator has cautioned that "The Socratic Method Can Be Dangerous" (Goldman, Educational Leadership, pp. 57-62.) for it teaches students "to question authority before they have the necessary adult experience." (Goldman, p. 57). But this is to misunderstand the Socratic dialogue, the basic function of which is not to lead the discussants to question authority but to enable the leader to guide the student from what he knows into new areas of knowledge as they engage in dialogical questions and answers. It is the leader who asks the questions, not the student. The Socratic method, essentially a dialogue which moves back and forth between question and answer lead to distinctions between good and bad reasoning and enables one to discover principles of logic, not through rote memorization of rules but through the discussion of such existentially relevant concepts as fairness, friendship, courage, truth, justice, and any other topic of concern. It helps students of all ages to listen scrupulously, recognize logical patterns, refine their propositions, and think for themselves. Such questions as: What did you mean by that? Can you elaborate on your answer? On what grounds can you make that statement? Didn't you say "such and such" a minute ago, but now you are saying "thus and so," are these statements consistent? Contradictory? Mutually exclusive? Compatible? What reasons can you give for these?

The logician will note that our Socratic questioning is appealing for use of The Rule of Evidence, The Rule of Consistency, The Rule of Coherence, etc, but students can be engaged in such considerations without the ability to distinguish them as such. The mere ability to identify the particular logical rule being used may not be "critical" in critical thinking, but actually thinking as such is!

Other questions typical of Socratic dialogue can be used to guide the students' thinking. The phrase "guide the students' thinking" is important, for the purpose of the Socratic questioning is to help the student learn how to think, not to tear down, demean, or display alleged intellectual skills or superiority. The dialogue must, therefore, be student-centered (Cf. Caraway and McCullough), used for the students' own intellectual growth. In doing this one may ask the student to examine the evidence he can give to support his contention, but also the student should be encouraged to consider with utmost seriousness what speaks against his position. As Richard Paul notes: "Part of the dues we must pay to justify rational confidence is empathy into the strongest case that can be made against our conclusion." (Paul, p. 7). Have we considered all possible variables? Have we "covered all the bases," considered possible mistakes? As Paul suggests, "Whenever we claim to know anything, our confidence is justified to the degree we have carefully attended to possible mistakes." (Paul, p. 7).

To help our students reason correctly as they answer questions similar to the foregoing, we can guide them to learn to use logic and to avoid common fallacious reasoning methods. The recognition of fallacies is to be encouraged--not for sophistic reasons--but for the purpose of greater understanding and more correct reasoning.

Students should be able to recognize fallacies in reasoning. Without space to describe these in detail, I can only mention the prominent ones which students should be able to recognize and avoid. These can be divided into two groups. First, Fallacies of Relevance occur in an argument when its premisses are logically irrelevant to, and therefore incapable of establishing the truth of their conclusions. These include: appeal to force, ad Hominem arguments (abusive and circumstantial), argument from ignorance, appeal to pity, argumentum ad populum, appeal to authority, accident, hasty generalization, false cause, begging the question, complex question, and irrelevant conclusion.

The second group of fallacies are Fallacies of Ambiguity. These are fallacious because of confusing word meanings, faulty grammatical constructions, shifts of meaning, applying predicates properly descriptive of parts of something to the whole, and applying predicates properly descriptive of a whole to its parts. These fallacies include: Equivocation, the use of different meanings of the same word in the same proposition; Amphiboly, in which the grammatical construction of the premisses makes them ambiguous; Accent, which includes a shift of meaning or emphasis; Composition, reasoning from the parts of a whole to the whole itself; and Division, in which one applies properties descriptive of a part of a whole to the whole itself.

Finally, students should know the various uses of language--informative, expressive, directive, ceremonial, performative--and how to use these appropriately, and they should be able to apply in their dialogical discussion the basic rule of definition.

It is important to know that involvement in the process of critical thinking should be an important dimension of any and all college courses, but merely because it should be a constituent in all courses does not preclude the legitimacy of individual courses specifically designed to teach critical thinking. Perhaps these courses could be made available for both students and professors.

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THE APPLICATION OF IMAGINAL EDUCATION AND LIFE METHODS IN THE UNIVERSITY SETTING

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Most of us involved in university education have become so immersed in the lecture method that we take it for granted that this is the most effective way to share knowledge with our students. Yet, questions are being raised from a variety of sources which suggest that both the effectivness and appropriatness of this method should be called into question. The problem can be discussed from many perspectives. There are, however, three which will form the basis of this paper on the use of imaginal education methods in the university classroom.

First, the lecture method assumes that a critical role of education is to disseminate a body of facts that will, if the students learn them, make them knowledgeable in a particular academic discipline. Secondly, the tradditional lecture method presupposes that the lecturer is the expert. Finally, the lecture method by its very nature makes students passive learners.

In contrast, imaginal education operates from another series of presuppositions, presuppositions based primarily on a paper by Kenneth Boulding entitled, " The Image." [1] The first presupposition is that everyone operates from images. Secondly, these images determine an individual's behavior. Thirdly, these images can change. The impact of a new message which causes a former image into question can create a situation in which a person will decide to change. Finally, the professor or teacher, for this method is as effectivly used in other educational settings as it is in the university, can discern out of which images a student is operating. The imaginal educator creates messages which give a person opportunities to change his or her image. However, change finally remains within the decisional realm of the student. The teacher cannot form an image change, but can only send messages. Because a student's immages are finally beyond the control of the professor, he or she is released to build a model for what he or she sees as a desirable change in the student. [2]

The method used for the intentional structuring of a person's response to the message which he or she receives is called the art form method. It is not an artificial imposition, but rather a self-conscious ordering of the way life comes to every person. The art form method is contentless in that it can be applied to any situation through asking questions at four levels--the objective, the reflective, the interpretive, and the decisional. At the objective level, the intent is simply to see what the data is, what is present in the objective situation. At the reflective level becoming aware of each person's subjective response to the situation is the goal. The next step, the interpretive, is designed to consider the meaning and purpose of the situation and what would be an adequate response to it. Finally, one must make a decision about how he is going to relate to the situation and to himself in that situation.

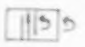
In imaginal education then, there is one thing to be taught and that is that in the midst of a given situation he or she can decide to live that situation affirming it and himself or herself in it. This is not an abstract statement or idea, however, but a method-- the human method of living one's life. It is finally the only thing to be taught and can be taught in any subject or situation. Therefore, imaginal education is contentless in that it has no specific content, but takes its content from the situation. The intent of a curriculum event on any topic then is not to teach anything but the human dynamic of that topic.

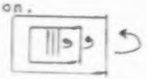
The purpose of this paper is to discuss the applicability of imaginal education and the life method for university teaching and curriculum building. Before doing this, however, it is important that there is a clear understanding of three key concepts. These are images, artform process and spiral curriculum.

The truism that " a picture is worth a thousand words," is certainly applicable when one discusses images. Basically, we are discussing the communication of data in creative descriptive terms. This implies the use of images over against abstract concepts and illustrative descriptions over against factual explanations. This is not to suggest that concepts and data are not important, but rather that they are the raw material upon which communication is established.

Now let us turn again to the process involved in imaginal education. Imaginal education is a human method because it allows one to go through a journey of conciousness, a journey in which one's situation is taken into consideration so that a decision can be made. Soren Kirkegaard outlines this journey in terms of a person's three levels of relfelction.[3] He indicates that an individual is a bundle of objective and subjective relationships. Among other things, I am a wife, mother, daughter, professor, educational administrator, bridge player, and friend all at the same time. We make an immediate emotional response as we are concious of our particular situation which is the first level of reflection. We are, however, not only capable of relating to our immediate situation, but we are also capable of taking a concious relationship to our own responses, thus choosing the appropriate action. This is the second level of reflection. We can go a step further by reflecting on this decision and can decide whether or not we will be the self who decided to respond the way we did. This is the third level of reflection and Kirkegaard claims that when a person thus wills to be his or her self authentic selfhood takes place. The task of imaginal education is to give the student an opportunity to decide selfconciously who he or she is going to be and how he or she is going to relate to his or her own life.

To relate what was just said to earlier comments on image, the three simple images shown below might be used to illustrate Kirkegaard's three levels of reflection.





Finally, before beginning a discussion of various types of applicability, one must understand the concept of spiral curriculum. This is a method of teaching an entire subject by levels rather than by disjointed parts. Let us take an example from physics. One teaches a child physics by showing how water turns into ice and steam. An adult learns more sophisticated applications of these same physical principles. With any age group, however, the levels include awakening the students to the knowledge, giving them some kind of awareness to it, involving them in the process and finally giving them responsibility for it.

The important thing in all of this is the structure. The structure of the curriculum includes the individual, the social, and the rational at each level. At each level it is critical to find the depth dimension that allows anyone to see the real meaning of it in relation to his or her life.

Let us turn now to the applicability of this method for use in university courses. It appears in the first instance that imaginal education is more suited to use in the social sciences and humanities. This idea is strengthened because the examples used in this paper are taken from courses which the author has taught in psychology, sociology, and education. It is important to remember, however, that the basic principles can be used in any discipline.

There are, of course, many possibilities, but they lie beyond the scope of this paper. It is feasible, therefore, to concentrate on four specific teaching styles-- the lecture, the seminar, the workshop, and the conversation.

One of the most effective ways to insure that a lecture is more than a compilation of facts is to construct a 4 X 4 chart, an outline which holds the material which is needed for a particular topic at all four levels . Let us use as an example Max Weber's prototype of bureaucracy as it might be taught in a sociology of education course.[4] After " brainstorming " all of the data and examples that are needed, one creates a chart like the one shown in Appendix A.

The purpose of building this kind of lecture framework is twofold. The first is to insure that a type of spiral curriculum is being employed. That is, students are receiving the same material at several levels which enables them to look at it through several different screens. Second, and more important, students are really dealing with four different curricula at the same time. The first is the basic curriculum which teaches the basic language, in this case Weber's prototype of bureaucracy. The rational curriculum allows students to relate what they are learning to society. The psychological curriculum aids students in developing individual thought processes and creativity. Finally, the imaginal curriculum is there to give students an image about life, limits, possibilities and decision.

It should be noted here that whether one chooses to use the lecture method or one of the others, it is also important to formulate both a rational objective and an existential aim. The rational objective places parameters around what facts and concepts the professor wants students to learn. The existential aim determines how one wants the students to be. In other words, the existential aim answers the question of how students will be different having participated in this particular segment of the learning process.

There is no question that lectures are a powerful tool in imaginal education, but there are also other possibilities. One of these is the seminar method. A particular benefit of the seminar is that allows in depth study of reading assignments. In this instance, the heart of the method is charting. Charting differs from outlining in two distinct ways. First of all, it is a human study method, not a gimmick for remembering salient facts. Put another way, it allows individuals to be changed. Secondly, it is done corporately rather than individually which allows individuals to broaden their own ideas through corporate insights.

In a two hour period, using the seminar format, virtually any academic work can be charted if the students understand the method to be used and the rational behind it. As an example, let us look at the Boulding paper that was cited earlier. It is, in fact, a paper that can be successfully utilized in almost all courses.

After a brief introduction which includes the ideas that one is charting the mind of the author and looking for structure, it is very important to show all of the steps in order to make the process as clear as possible. Again, it is beyond the scope of this paper to discuss in detail what needs to be done. Appendix B, however, shows how a chart might be created for the Boulding paper of twenty six paragraphs.

In brief, the first step is to number the paragraphs and then to get out the key words in each paragraph. This is also the time to discover the key structural breaks in the paper.

The next step is to create topical or content titles for each section. A helpful gimmick is a word image in each section. Next, each section is charted as a whole, as though it were the only part of the paper that existed. The key question to be raised is, " Why was this section or paragraph included?" If this step is followed for each section, the internal relationship of the paper will begin to emerge.

At this pointit becomes important to look more closely at each section asking the question once again, " What is this section about?" It means grounding what one intuits and then pushing through to the implications of what that means at a deeper level.

After this section is completed, it is time to choose the key paragraph or paragraphs. This is accomplished by asking the question, " What is the key concept or idea that lies at the heart of this paper?" There may, of course, be several key elements add to some extent what a professor wants students to learn guide which ideas are emphasized.

The fact remains, however, that the most effective learning takes place in the last two sections of the seminar. The first is to have each student write one sentence which explains the entire paper. The last is to have the group talk about the implications of the paper from their own particular vantage points. In the case of the Boulding paper, the focus might be on education. Questions could center around the advice that he is giving to teachers. Then the group could deal with the issue of designing and sending messages perhaps concluding that everybody sends messages but the key lies in deciding what messages are important.

The next method that can be used as an effective teaching tool in the university setting is that of the workshop. In many cases, it is the one that takes the most careful preparation on the part of the facillitator, but it is also the method that yields both the most practical results and the deepest grounding in theoretical issues. This is not suprising as individuals feel strongly about issues which affect them directly and they have much to gain from working through a particular theoretical model to the point where they can see the possibility of concretized results.

Let us return to Max Weber's prototypes of bureaucracy as they are seen in educational institutions. All of us recognize bureaucracy in the educational institutions with which we are associated. Bureaucracy, with both its positive and negative aspects, is a way of life. How each of us chooses to deal with bureaucracy depends, at least in part, on the bureaucracy that we see and experience directly.

One way to determine where an individual stands on a specific issue is by intentional model building. If one were to deal with bureaucracy in the educational institution in a two hour workshop, it might look like this.

After a brief introduction during which time the facillitator gives a context for model building, based primarily on the question," What do I do?" and the importance of being able to answer that question,the class is divided into groups. As a task, the groups are to: 1) list ten instances of bureaucracy as each has experienced them in a particular school setting, 2) gestalt these instances into several smaller groupings, 3) turn the content of these lists into goals that are meant to deal with bureaucracy in a positive way, and, 4) create some practical strategies that will support these goals. Each group can share their results with the rest of the class.

The case study approach works basically the same way. Experience has taught, however, the closer that a student can identify with a role in which he is currently engaged or hopes to be engaged in in the future, the more learning that is going to take place.

Finally, conversation can be used as a teaching tool. It can center around an art form such as a film, a topic using a particular newspaper, magazine or journal article, or an issue which uses a variety of sources. The key, as in the other approaches, is to formulate questions which enable stüdents to deal with the four levels of conciousness-- the objective, the reflective, the interpretive and the decisional.

In summary, university professors, like all who are engaged in education, have a responsibility to help create learning styles which will prepare students to live fully in the twenty-first century. Imaginal education with its with its varied options of style and form, gives this opportunity for it is about changing images out of which people live. This, in fact, is now, as it has always been, the key role of the university.

Appendix A

<table>
<tr><td colspan="4">[illegible]</td></tr>
<tr><td colspan="4">NATIONAL OBJECTIVE- To understand the compo-EXISTENTIAL AIM - To see that by participating in bureau-
nents of bureaucracy cratic structures we are both molded b
them and create change in them</td></tr>
<tr><td>FOUR KEY ELEMENTS
OBJECTIVE</td><td>PROTOTYPE VERSUS ACTUAL
REFLECTIVE</td><td>HOW DIFFERENT GROUPS INFL
INTERPRETIVE</td><td>IMPLICATIONS FOR EDUCATIO
DECISIONAL</td></tr>
<tr><td>The functional division of labor
- tasks as small manageable units
- highly specialized personnel</td><td>monotony
alienization
demoralization</td><td>differentiation of teaching and administration
proliferation of suppor specialists
needs and abilities of students</td><td>age-grading
segregation of retarded and handicapped
specialization which has not developed</td></tr>
<tr><td>The hierarchy of authority
- co-ordination of discreet units
- pyramid
- lines of communication</td><td>informal authority
communication in a predominately downward direction</td><td>lines of authority in a school district
state system of education
individual school policies and personalities</td><td>role of the superintenden educator or businessman?
the sabotaging of policy decisions
superintendent and subordinates
teacher-student relationships</td></tr>
<tr><td>The definition of staff roles as offices
- clearly defined circumscribed authority
- obey offices and not people</td><td>question of expertise
other factors</td><td>collegial relationship
personal characteristi
informal networks</td><td>authority of principal o teachers
authority other than academic over students
selection appointment an promotion of staff</td></tr>
<tr><td>Operation according to rules of procedure
- specialized rights and obligations
- basis of organizational decision</td><td>lack of objectivity
role of friendship</td><td>rules as ends to themselves
stifling of creativity</td><td>restrictions of student behavior
rules governing teachers
structural looseness rather than rigidity?</td></tr>
</table>

APPENDIX B

<table>
<tr><td colspan="27">Boulding: " The Image "</td></tr>
<tr><td colspan="27">IMAGE AS A KEY TO CHANGE</td></tr>
<tr><td colspan="15">Dynamics of Message and Images</td><td colspan="9">Dynamics of Image and Value</td><td colspan="3" rowspan="3">His Episto-
mology</td></tr>
<tr><td colspan="6">Behavior Depends on Images</td><td colspan="9">How Messages Influence Images</td><td colspan="6">Value Screens Guard Images</td><td colspan="3" rowspan="2">Reception of Images</td></tr>
<tr><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td colspan="2">Message Changes Images</td><td colspan="7">4 Effects of Message on Image</td><td colspan="4">Value System</td><td colspan="2">Internal Consistancy</td></tr>
<tr><td>1</td><td>[illegible]</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td><td>[illegible]</td></tr>
</table>

Notes

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BUREAUCRACY AS AN IDEAL TYPE
IMPLICATIONS FOR EDUCATION

RATIONAL OBJECTIVE- To understand the components of bureaucracy

EXISTENTIAL AIM - To see that by participating in bureaucratic structures we are both molded by them and create change in them

FOUR KEY ELEMENTS OBJECTIVE	PROTOTYPE VERSUS ACTUAL REFLECTIVE	HOW DIFFERENT GROUPS DEAL INTERPRETIVE	IMPLICATIONS FOR EDUCATIO DECISIONAL
The functional divisio of labor - tasks as small manageable units - highly specialized personnel	monotony alieanization demoralization	differentiation of teaching and administration proliferation of suppor specialists needs and abilities of students	age-grading segregation of retarded and handicapped specialization which ha not developed
The heirarchy of authority - co-ordination of discreet units - pyramid - lines of communication	informal authority communication in a predominately downward direction	lines of authority in a school district state system of education individual school policies and personalities	role of the superintenden educator or businessman? the sabotaging of policy decisions superintendent and subordinates teacher-student relationships
The definition of staff roles as offices - clearly defined circumscribed authorit - obey offices and not people	question of expertis other factors	collegial relationship personal characteristi informal networks	authority of principal R teachers authority other than academic over students selection appointment an promotion of staff
Operation according to rules of procedure - specialized rights and obligations - basis of organizational decision	lack of objectivity role of friendship	rules as ends to themselves stifling of creativity	restrictions of student behavior rules governing teachers structural looseness rather than rigidity?

Boulding: " The Image "																										
IMAGE AS A KEY TO CHANGE																										
Dynamics of Message and Images															Dynamics of Image and Value									His Epistomology		
Behavior Depends on Images						How Messages Influence Images									Value Screens Guard Images						Reception of Images					
SPACE	TIME	RELATions	NATURE	EMOTion	KNOWLedge	Message Changes Images		4 Effects of Message on Image							Value System				Internal Consistancy							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

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EVALUATIONS OF COMPUTER-ASSISTED LEARNING

FRIDAY, 5 JULY

0830 - 1000

EVALUATING EDUCATIONAL TECHNOLOGY: QUALITY AND PRODUCTIVITY

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Once more the cyclical history of educational technology seems to be in motion and offering another high point of potential. Just recently a National Task Force on Educational Technology was created by the Office of Education. Although undoubtedly there are many forces at work to push forward educational technology once again for comprehensive consideration, there are two overriding issues that urged at least our institution to engage this panacea one more time. Curiously, the two issues share in common the notion of gulfs or transition; or transition as a kind of gulf.

The first gap can be rapidly identified and defined. Between the passion to create educational technology programs on the one hand, and the urgency to purchase and implement such programs on the other hand, there is the need of evaluation. Between 1981 and 1983, a network of teachers, administrators and librarians in California evaluated some 3,000 software programs designed for junior high school students, and found less than 5% of them acceptable. Clearly, before faculty fly off to create new programs or administrators busily spend limited funds for magic solutions, it is time for the quiet role of contemplative evaluation of what already exists in abundant supply.

The other gap is more speculative and harder to define largely because it grows out of profound misgivings many rightly have about the future of support for higher education. A number of chief academic officers are not sanguine about the ability and the motivation of state legislatures and governors to continue funding higher education at higher and higher levels, especially if the shrinking pool of young people brings about declining enrollments. How to justify asking for more or even the same amount to teach fewer students? Then, too, many departments--on many campuses, most departments--are understaffed. Indeed, some departments already have undergone such extensive behavioral modification that although in the next five years they can anticipate a number of retirements, they already submissively ask for only half of those for replacement.

Much of the understaffing has been disguised or recomputed and emerges as greater productivity. Whether that takes the form of fixing a stipulated SFR (Student Faculty Ratio) or SCH targets (Student Credit Hour load per course), the net result is the same: faculty are being asked to take up the slack of the faculty not hired. Typically, if a department needs three additional faculty, no one expects to get the third position. The fight is for the second position or the first. But now there is the possibility of educational technology as the second or third faculty, because human productivity may be approaching outer limits and options. Thus, between need on the one hand, and the limited level of financial support on the other hand, stands educational technology as a possible way of bridging the gap. The value of aligning both gulfs is the prospect of bringing together what is not often joined: the issues of quality and productivity.

I. The process of evaluating educational technology involves at least three major phases. First, it is necessary to identify the different roles of educational technology. Second, the audiences or clients need to be specified because of the importance of matching programs and people. Finally, there are the criteria for evaluation themselves; or rather two sets of criteria--for quality and for productivity.

The first task essentially requires a taxonomy by function and role. Generally, educational technology falls into one of four main modes or configurations. The first and most familiar can be designated as the assistance function. Here hardware and software absorbs from 5% to 25% of instruction, mostly in the form of drill work. This is usually the least interactive version of educational technology, and the instructor maintains control; indeed, even more control now that drudgery has been assigned to the machine. Basic math and language grammar programs are typical examples.

The next stage is more advanced in that the program now does not merely test and apply knowledge but conveys it, with the testing function following close on the heels of instruction. Here the program exists in a shared relationship with the instructor and averages between 25% to 50% of the course. Such a program usually intensifies the role of the teacher who may be required to amplify the course for brighter students because this kind of technology, which is basically self-paced, is capable of considerable acceleration.

The next stage is even more ambitious and usurptive. Here, a fundamental substitution of program for instructor is consciously part of the design, and the program usually requires sophisticated levels of interaction between student and program. Such instruction is not only primary in that it occupies between 60% to 90% of the educational process, but it also makes the student rather than the instructor primary. The program serves the student in the sense that the student has taken charge of his own learning. The last and final stage is ushered in when the program is now totally the teacher and the student is now an autonomous learner. The human instructor may or may not serve an ornamentation extending role, but in terms of the competencies to be achieved in the course, he or she has become superfluous.

Audience or clients generally are distinguished by typical student demographic characteristics. Age is a critical one, for younger students are far more receptive and even experienced than older students. This is somewhat ironic in that still another factor is distance from source of education. Distant learners are more often more easily served by educational technology, but generally such distant learners tend to be older--so-called non-traditional students--and thus either more resistant or uneasy about responding to educational technology. Indeed, many older distant learners feel they are not being offered the regular education, but some mechanical, second-rate substitute. To age and distance should be added the traditional geographical distinction of urban, suburban and rural, with the pattern here predictably from more favorable to less favorable attitudes, respectively. Finally, what has also emerged as a critical factor in the discussion of audiences is whether the student is majoring in the arts, humanities, or social sciences; or in the sciences, math and technical areas. The latter students show a greater disposition for using educational technology, partly because the best programs are in technical areas and naturally lend themselves more to sequential learning; and partly because strong and charismatic teachers are not regarded with the same passion as they are by many arts, humanities and social science majors.

The actual categories of evaluation, like the functions of technology themselves, fall out in a basic ascending power of importance. Minimum essential determiners of quality have to do with ease of access to the program, intelligent sequency, and basic organizational clarity. A more ambitious criterion has to do with the degree to which it is competency based; and the degree for which that competency focus is built into the review and testing process. In other words, no program can be granted a positive evaluation unless evaluation is built into the program. A perhaps surprising, but quite important criteria is that of play--an attitudinal dimension which manifests itself in good humor, saintly patience, wit, whimsey, and pleasure. Finally, and most important, the highest marks are reserved for those programs which consciously and intelligently involve the student in his or her own learning. Unlike attending classes, educational technology offers virtually none of the fringe benefits of socialization on the one hand, or alienation on the other. It compensates by expecting mastery from the student, not from the teacher.

The criteria of productivity are no less exacting. The key yield is fiscal--a determination of the cost per student/per course/per term for each program. To that should be added more efficient anf flexible scheduling, especially if classroom space in general, or at certain times of the day or evening, are at a premium. Where such technology is employed to service distant learners, increased enrollments at lower costs have to be factored into the bottom line. Finally, there is the computation of how many fractions of faculty positions have been saved, if any, by educational technology. These savings of positions actually represent dollars which can be spent for equipment or supplies or facilities; or for serving other instructional needs. Minimally, all or a piece of that second position should have been realized; and even if no money is made, a reduction of the understaffing problem has to be regarded as a major gain.

II. The process at this point becomes one of conveyance and moves closer to decision making. Ratings of quality and of productivity are dovetailed in the form of a grid toward the end of determining which programs optimize quality and productivity. Because the student throughout has had traditional instruction, it is possible to arrive at the average level of performance in a course (a combination of student evaluation of faculty performance and a series of student outcomes) or in a number of courses which are matched by educational technology programs. Thus, for example, if the average of a set of English courses is a 3.2 out of a total of 4.0, then clearly only educational technology courses which perform at the same level of 3.2 would be acceptable. Actually, what often occurs is a higher average score (in some cases a 3.6) for educational technology. Moreover, there is the need for longitudinal follow-up in both traditional and educational technology courses, because the latter has built into it the goal of student involvement and thus offers the prospect of significant future growth and self-mastery.

Evaluations of educational technology initially or ultimately should be discipline specific. The biologists should review the biology programs, the historians the history programs. This is done not just for the obvious reason that expertise must be assured. Rather, such review is a form of faculty development. Since educational technology most often represents an alternative approach or a series of alternative approaches to what the individual faculty member currently is doing, the process of evaluation inevitably becomes a process of comparison for potential change. Such a process evidently is more easily the case because no one is watching or expecting or mandating that the change occur. It is a closed and private arrangement between the instructor evaluating and the program he is reviewing. Naturally, when instructors of the same department become involved together in reviewing a multiple sections course such as Math, the entire process of faculty development can be more structured.

Conclusion

By identifying the programs that earn the highest marks in both quality and productvitiy, and by linking the process of evaluation to that of faculty and program development, the hope is that instruction in the future will fuse the best of the human with the best of the machine; and thereby quality and productivity may not be alternatives, but versions of each other.

NOTES

Examples of the four different types of programs identified in the taxonomy will be presented.

THE ELECTRONIC UNIVERSITY:
ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION

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ARTIFICIAL INTELLIGENCE RESEARCH TODAY

Expert Systems and Artificial Intelligence

In order to appreciate the status and prospects of AI research, one must distinguish between "expert systems," which are currently being used in several fields, and true "artificial intelligence," which lies in the future.

"Expert systems" are complex computer programs which attempt to simulate the rational processes through which human experts approach problems in specialized fields. The major components are: 1) a set of rules which defines the approach to be taken, and 2) a body of knowledge which is relevant to the specific problem. [3,4] The "rules" are supplied by one or more experts in the relevant field of study. The system applies the rules to the data set and reaches conclusions relative to the problem given it.

Expert systems currently are being used in a number of fields with some success. The PROSPECTOR system guided geologists to molybdenum deposits in the American Southwest which the human experts it emulated had been unable to locate after efforts spanning several years. [1] Similarly, INTERNIST I (diagnosis in internal medicine) and MYCIN (prescription of antibiotics) have proven valuable and accurate in their fields of medicine. In business, Digital Equipment Corporation has used its RI program to assist in the layout and configuration of computer systems for its customers. The system's solutions proved accurate in 85% of over 3000 orders over one three month period. [3]

As impressive as these results seem, expert systems have limitations. They are very specialized, take a relatively long time to produce, and require the cooperative effort of AI specialists and human experts in the field of study. They will be able: 1) to make associations and inferences: 2) to "learn" from experience (avoid mistakes they have made in the past); 3) selectively access and assimilate broad bases of electronic data in a variety of disciplines and fields; and 4) communicate with humans through keyboards, speech, and images in several human languages. [4]

The creation of AI systems depends upon the realization of several research goals being pursued at present. Parallel processing (the performance of several tasks or lines of inquiry at the same time), higher speeds and storage capacities, and perfection of information assimilation and communications techniques are all necessary. However, these goals are being pursued vigorously in several countries.

International Research Projects in AI

Perhaps the most ambitious AI project is the Institute for New Generation Computer Technology. Under the guidance of the Ministry of International Trade and Industry of Japan, this is a 10 year cooperative project of several Japanese companies designed to develop Fifth Generation (AI) computer technology.[5]

In the United States, several private companies are funding research in this field. Recent antitrust exemptions granted joint research efforts in this area should spur the efforts of the private sector in the U.S. In addition, the Advanced Research Projects Agency within the Department of Defense supports basic research in AI with a primary concern of developing defense applications. [4]

European countries are addressing this challenge as well. The United Kingdom committed $310 million to initiate its Advanced Information Technology project in 1983. The project will involve several companies (including UK subsidiaries of U.S. firms), who will commit another $210 million to the project. Similar efforts by other countries and eventually coordinated European effort seem likely. [13]

FIFTH GENERATION TECHNOLOGY AND HIGHER EDUCATION

The Electronic University

For the purpose of projecting the role of AI systems in higher education, let us hypothesize such as system appropriately titled THE ELECTRONIC UNIVERSITY. This system should have the following capabilities: 1) capacities of inference and association; 2) the ability to access large electronic data bases in a variety of disciplines and assimilate this information under its own control; 3) independent access to student electronic records; 4) independent access to curriculum materials in various disciplines. (These materials may be stored and presented electronically or stored separately and referenced in the system.

Such materials should include audio-visual presentations as well as written materials. Digital electronic storage, recovery, and presentation of such materials is certainly imaginable. It seems likely, in fact, that network television productions and other video productions might be readily available in electronic data bases in the near future, much as the New York Times, Wall Street Journal, and Atlanta Constitution are today.); and 5) the capacity to communicate and confer with faculty in all disciplines in curriculum and research decisions. As sophisticated as such a system sounds, it is well within the range of capabilities being pursued in international AI projects. Indeed, much of the necessary data storage and retrieval capacity is available at present and we have not even broached the multi-lingual capabilities which are an important objective of the Japanese project.

This sytem may assume a very large part of the central knowledge transmission functions of universities. Properly configured and guided by instructions from faculty, it could be used interactively by individual students: 1) to evaluate each student's background, interest, academic performance, and aptitutdes; 2) to structure an individualized program for study for each student; 3) administer curriculum materials and activities; and 4) evaluate performance and transmit reports to students and faculty.

Such an approach to higher education offers some marked advantages. Surprisingly enough, teaching and learning could become more interdisciplinary. The AI system could integrate materials from various fields in its curriculum selection and presentation more easily than individual human specialists might. Similarly, it could assimiilate advances in educational theory and techniques into the presentation of substantive content more quickly than most human faculty can. Moreover, this balance could be built in to customized programs of study for each individual study.

The Electronic University would also alter the time and space boundaries of the traditional institution of higher education. Students would proceed through their prescribed course of study at their own pace. Given proper interactive telecommunications equipment, they could do so from virtually anywhere. National and international distribution of active students would be possible.

The organizational boundaries of universities would also be altered. AI systems would access data bases shared by universities, governments, and private organizations. Specialists from all these institutions could interact with each other and their AI systems continuously. This process could add considerable breadth to the knowledge transfer functions of higher education.

The Role of Educators in the Electronic University

In the AI system described, both the teaching and research activities of professionals in higher education will change significantly. Teaching activities, for example, will be refocussed from knowledge transmission functions toward individualand group student projects. These projects might involve training in research techniques, application of research analyses to practical situations, and/or the implementation of recommended programs in various sociopolitical settings. Faculty will also be spending considerable time training students in the proper use of AI systems constructed for their chosen professions. Ideally, the time saved in the knowledge transmission function will be used from fruitfully in this sort of intensive faculty/student contact.

AI systems will also prove helpful in research activities. Indeed they should alter the forms and practice of research and publication. Researchers will rely heavily on their AI partners for literature review. In fact, it is probable that many academic publications will be in electronic form, deposited in widely accessible data bases. In addition, researchers will work closely with their AI partners in designing research projects, analyzing and interpreting the results, and comparing conclusions with those of other studies. Finally, the opportunity for the common electronic storage of data analyses makes possible the review of the reserach projects of others more completely and quickly than is now possible. This shoudl provide the twin benefits of raising the level of production from research projects and facilitating the rapid reevaluation of contradictory studies.

AI systems create another very intriguing possibility for university faculty, the opportunity to achieve academic immortality! In a manner similar to the present expert systems but far more complex, educators could build electronic models of their approaches to academic problems. Such models could "capture" the analytical, research, or teaching styles of faculty electronically. Once completed, they could be transported between universities, to other institutions, or simply be preserved over time. Students the world over might share the experience of exploring the labyrinths of physics with an electronic Einstein as their guide, or the more dubious pleasure of having their work evaluated by the master.

THE PERILS OF ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION

The impressive benefits noted above would not be achieved without risk. There are formidable philosophical, moral, and practical questions raised by the prospect of the Electronic University. These issues must be identified and addressed by educators if we are to use this technology in an appropriate fashion.

Perhaps the most significant criticism of AI based education is that it is both a de-socialization and an over-intellectualization of the educational process. In the electronic university, a very large proportion of a student's learning experience is gained in isolation from human contact. Students would interact extensively with their electronic mentors, but might be far removed from university faculty and each other. This could contribute to slower social growth as well as an inadequate understanding of the social foundations of human knowledge.

Similarly, AI systems would tend to produce an over-intellectualized approach to teaching and learning. As complex and individualized as they might be, systematic rational approaches to problems will be more easily duplicated in AI systems than the more unpredictable phenomena of intuition, sudden insight, or creative inspiration. Overdependence on these systems raises the risk of wooden, uninspired teaching, learning, and research.

As in all other areas of potential application, educationaluses of AI systems raise questions of how responsibility for AI based decisions should be assigned and how these decisions should be monitored. The system described above delegates a very significant decision making role to a machine. Learning programs are constructed, educational activities created and evaluated, and some sort of certification assigned by a computer. If these decisions prove erroneous, who bears the responsibility?

A similar problem arises in the area of research. The AI systems envisioned here would certainly be capable of analyzing research data, reaching conclusions different from those of their human partners, and "publishing" those conclusions in electronic form. What happens when knowledge is no longer human knowledge? Whose intellectual property will such a publication be? How will credit or commercial gain from such property be distributed?

The practical problems center around two related questions. The first of these is control. How can the human element in higher education be defined and protected when much of what has been the human domain (intellectual activity) becomes automated? This is a dilemma which we share with all other knowledge professions as we confront the emergence of AI technology.

The second practical problem is institutional. Conventional university organizational structures impose a fragmented, specialized pattern on knowledge, learning, and teaching. To date, most technological advances have compounded the need for such specialization. As if propelled by an intellectual "Big Boom", disciplines seem to be moving at high speeds, each on its own unique path, away from each other.

Now, for the first time, technological advancement will provide us with an opportunity to reverse this trend. AI and its educational application, the Electronic University, make possible greater interdisciplinary integration in the pursuit and transmission of knowledge. Institutionally, the issue is whether to force AI into existing organizational structures, or to forge new structures to exploit the potential of the technology.

While the resolution to these questions is not clear, the need to address them is. Personal computing has entered higher education piecemeal, percolating from the bottom up, as individualfaculty search for applications in their fields. Clearly, if AI develops in the same fashion, we will have missed a major opportunity to realize its benefits. We must begin immediately the process of preparing our institutions of higher education for using this promising technology properly.

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HOW COSTLY ARE COMPUTER BASED INSTRUCTIONAL SYSTEMS? A LOOK AT TWO APPROACHES

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University of Guelph

1. Introduction

In the introduction to a series of working papers "Computers on Campus", Tucker (1983-84) names three American universities[1] which he states "to my knowledge, outrank all others in the nation with respect to current scale of investment in information technology for instruction purposes--close to $200,000,000 all told over the next few years." With costs of that magnitude, teachers in many other resource-starved North American universities may be excused if they think the bill for computers in education is too big. One Canadian university Vice-President remarked recently "Don't talk to me about computing costs, it is just one big sink hole." Systems predicted to cost pennies per hour of student contact time when purchased have shown a tendency to run into large dollars per hour. What are the costs which a teacher may expect to be incurred on his or her behalf when using a computer based learning system for instructional purposes? This paper will present an analysis of predicted and actual costs in two systems. It is offered as a contribution to clearing the air about the true costs of using computers for instructional purposes.

2. Projected and Actual Costs for PLATO

2.1 Equipment.

The best known and perhaps the oldest established computer based learning system in American and some international universities is PLATO. PLATO is considered by Hofstetter (1982) to be the state-of-the-art system for computer based instruction (CBI) providing a rich CBI environment with high-resolution graphics, student control keys, touch, input screens and a large number of connections to external systems such as heart-rate monitors, slide projectors,videodisc players, speech synthesizers, to name only a few of the peripherals which may be connected to it. To support this range of features a computing resource of considerable size is required. Alpert and Bitzer used a large system of 4,096 users in preparing their cost estimates. Hofstetter (1982) reports that at the University of Delaware the PLATO system installed in 1975 with 32 terminals has now grown to 330 terminals with planned expansion to 560 terminals. The total investment in equipment for this system was reported to be $3,801,971 as of October, 1981 (Hofstetter, 1982). The annual operating cost for the system in 1981-82 was $3,164,698 of which $1,335,049 or 42% was derived from external grants and contracts leaving a net operating cost to the University of $1,829,649 for its computer based instructional service. Both in terms of capital investment and in operating costs, the use of computers on the scale of PLATO makes major demands for priority and long term commitment on the instructional budget. At this level the costs are aggregated as a total budget expenditure.

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[1] Carnegie-Mellon University, Brown University, and Massachusetts Institute of Technology.

It is also customary to analyze the costs on a per student contact hour basis. This is the figure which is frequently used to downplay the large outlays. Alpert and Bitzer used a per student hour cost and Kearsley found it to be exceeded by a factor of 4 using the upper range and as high as 8 using their low end hourly estimate.

In 1970 Alpert and Bitzer (1970) projected a range of $0.34 to $0.68 per hour per student contact hour. When this projection is adjusted for inflation using a 14 year inflation factor of 2.63, those 1970 dollar costs become $0.89 - $1.79 per hour, still a reasonable figure. However, Kearsley (1977) reported that the cost per hour for a single terminal leased on an annual basis would cost $7.20 per hour or 4 to 8 times the projected cost.

Hofstetter (1982) has analyzed the actual costs at the University of Delaware and argues that the costs are, in adjusted-for-inflation dollars, only twice the Alpert and Bitzer projection. His argument, however, is flawed in that he calculates an hourly cost in 1982 of $2.47 per hour using all 330 connected terminals for an annual per terminal cost of $3,816. He concedes that in actual use the average number of terminals in use at peak demand time is 140. If this is the average peak load then non-peak periods would be something below that. The average peak demand then is 42.4% of capacity. He uses Alpert and Bitzer's estimate of 2,000 hours of use per terminal per year in arriving at his cost of $2.47 per hour. A more accurate analysis would take into account actual student use rather than a projected capacity figure in calculating a per student hour cost. If one uses the 140 terminal per hour peak demand (the 190 non-used terminals are assigned an overhead status for redundancy or developmental purposes) the annual cost is $1,259,204, divided by 140 or $8,994 per student used terminal. This will yield an hourly cost of $4.48 per student for the use of the PLATO mainframe. To this must be added the cost of the student terminal amortized over five years[1] at $580 per year or $0.29 per terminal hour. Annual maintenance costs on the terminal amount to $0.23 per hour. In addition, communication costs between the student terminal and the mainframe of $0.12 must be included. Thus to the costs of the central system must be added $0.64 per hour and this must be adjusted by the overhead factor of 2.357 (330 connected terminals divided by 140 average demand terminals) to yield a per hour cost for the student terminal of $1.51. The hourly cost per student, using a more realistic analysis in terms of student demand, becomes $5.98 or marginally less than Kearsley's figure of $7.20 per hour. Since this analysis has taken the average peak demand as the basis it may have erred on the generous side and one would be inclined to accept Kearsley's estimate of what the real costs are in terms of students served.

2.2 Course Materials.

Thus far the discussion has been restricted to the costs of purchasing and operating the hardware system. Of equal, if not greater, importance is the cost of creating or procuring the course materials. Hofstetter (1982) gives evidence based on Delaware's experience that the typical tutorial with good interaction takes 200 hours to produce: 55-60 hours by the instructor and 140 by the programmer. Other estimates for program preparation range from 100 hours per hour of instruction for lessons without sophisticated judging or graphics to 400 hours where graphics and simulations are required.

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[1] Hofstetter uses a 7 year amortization rate but Alpert and Bitzer use 5 years which even seems extreme in view of the rapid changes in computer technology.

There is no reason to dispute these high costs since they have been determined by experience. Big systems will have these costs and small systems will have costs of a similar magnitude but the scale of the investment will be vastly reduced thus down-scaling the total impact on the teaching budget of the "big plunge".

3. The Costs of a Low-end Microcomputer Alternative

The emergence within the past two or three years of IBM's PC and PC Jr. have made inroads on the exclusivity of mainframes and large minis on many campuses. The name PC stands for Personal Computer but many teachers who use it personally with off-the-shelf word processing, spreadsheets or file management software packages are stumped when it comes to designing interactive teaching materials.

An interdisciplinary project team at the University of Guelph began to develop and test NAPLPS based videotex teaching materials in the summer of 1983. A second team took these materials and devised a videotex integrated teaching and learning system (VITAL) which is described in another paper. Suffice it to say here that VITAL is designed in such a way as to employ the user-friendly attributes of popular word processing and spreadsheet software packages to create teaching materials, and to program these as interactive modules. This part of the paper will deal with the cost factors of the VITAL system.

3.1 Equipment and Operating Costs.

The VITAL software is currently written in Basic to run on MS-DOS type machines. The minimum configuration is a PC-XT or work-a-like with 10 MB hard disc storage. This will act as the server and will support two student terminals. A second level utilizes a network and PC buffers between the server and each pair of terminals allowing for a larger number of students. The student terminals may be as low-cost as the Commodore 64, the intermediate but good IBM PC-Jr., or a hardware NAPLPS decoder. A server plus two student terminals will provide 144 student contact hours per week of six 12-hour days. For this analysis a demand load of half that or 36 hours per terminal per week will be used. In the University of Guelph there are two 13-week terms and will use 936 hours per year to determine the hourly cost. This is less than half the Alpert and Bitzer figure of 2,000 hours. In Table 1 the capital costs for a 2-terminal system and a 10-terminal network are shown.

TABLE 1 CAPITAL COST ESTIMATE FOR TWO VITAL SYSTEM CONFIGURATIONS (US$)

	Server and Twin Terminals	Server, network and 10 Terminals
1. Server		
IBM-XT with 10 megabyte drive	4,000	
IBM-PC with 20 megabyte drive		6,500
2. VITAL software licence	3,000	3,000
3. Terminals (2) IBM PC-Jr.	3,000	---
4. Network	---	6,000
5. Buffer units (5)	---	10,000
6. Terminals (10) IBM PC-Jr.		15,000
Total	10,000	40,500
Annual cost amortized over 4 years	2,500	10,125
Maintenance, equipment cost @ 10%	1,000	4,050
System Annual cost	3,500	14,175
Cost per terminal	1,750	1,418
Cost per student hour (936 hrs.)	$1.86	$1.52

In the above table it will be noted that the VITAL Software cost is the same for both systems which is due to the marketing arrangements whereby a site licence is issued allowing unlimited duplication within that site or institution. Thus in practice one would expect to see several systems showing the one licence fee. Three points emerge from this analysis. First, the VITAL system when evaluated and installed on its merits does not commit an institution to a "big plunge" but for the cost of several terminals on a mainframe system one can gain an entry position in CBI with VITAL. This may be important to institutions which have several thousands of dollars not "$200,000,000 over the next few years" to invest in computer based instruction. Secondly, on a conservative analysis of student contact costs at $1.52-$1.86 per hour per terminal the cost for VITAL is close to Alpert and Bitzer's adjusted projection of $0.89-$1.79. They needed 4096 terminals and a projection of 2,000 hours per annum per terminal to reach this cost. VITAL, operating on IBM-XTs and PC-Jrs, does it on a projection of less than 1,000 hours and requires only two terminals to get started. The costs for VITAL tumble as the system grows and as the average demand increases. In practice PLATO has been found to be much more costly per student contact hour. In the analysis of the University of Delaware's costs, PLATO at $5.98 per hour is three to four times more costly than VITAL and has an entry price tag of several million. Third, VITAL operates on the ubiquitous PC or work-a-like systems which puts it within the reach of the teacher with median computer skills to begin creating his or her own instructional materials. On at least five counts VITAL scores points according to Naisbitt's (1982) "Megatrends" i.e.:

Forced Technology ⟶ High Tech/High Touch
Centralization ⟶ Decentralization
Institutional Help ⟶ Self-Help
Hierarchies ⟶ Networking
Either/or ⟶ Multiple Option.

4. Conclusion

VITAL is not PLATO nor is PLATO VITAL. The one takes your money as you have it and want to spend it. The other takes it all now whether you have it or not. Both are part of the age of information technology but their costs of playing the game are vastly different.

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INDEPENDENT STUDY AND DISTANCE LEARNING

FRIDAY, 5 JULY

1400 - 1530

COMPUTERLINGUISTICS - A CHALLENGE IN CURRICULUM DEVELOPMENT

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SOME ASSERTIONS CONCERNING COMPUTER APPLICATIONS AND HIGHER EDUCTION IN ARTS FACULTIES

The following statements represent the assumptions that underlie our work. While they will not be defended, we will make our position clear on these issues in this paper and the associated presentation.

1. The use of computers in non-mathematical applications is a growth area.

2. User-machine interface research and development require computer specialists thoroughly grounded in linguistics.

3. Computer science, envisaged as the processing of information, comprises concepts and procedures which can support the development of cognitive tools of general usefulness.

4. The reorganization of state directed higher education will not necessarily lead to a better educational system.

5. The key to meeting challenge in an area of rapid curriculum growth is the establishment of an effective system of producing high quality curriculum materials.

6. The training of teachers and preparation of students to be educational innovators and teachers of high level technology is a major weakness of our higher education system.

The situation which these assertions refer to is one in which computer technology is developing rapidly and is likely to continue to do so. The cost of computation is decreasing, there is a move to smaller computers, and access to computers at home, at school and at college is rising rapidly. The critical aspect in making computer technology available to a more diverse student population is not the computer itself, nor the provision of a few short courses in computer programming for arts students with carefully selected non-mathematical problems. Suggestions made in the Netherlands for the greater involvement of industry in computer science courses may be helpful, but are insufficient. What is needed is the creation of courses developed within a framework in which the purposes of curriculum innovation and thefaith of the course developers are clearly reflected. Students quite rightly require reassurance that the courses which they undertake will contribute to their personal growth and/or the marketability of their skills.

AN EXAMPLE OF CURRICULUM CHALLENGE

1. Reorganization of the Arts Faculty, Rijksuniversiteit Utrecht

Universities in the Netherlands, as is the case elsewhere in Europe, have hitherto been characterized by an organizational structure based on faculties and subfaculties devoted to a single discipline, so that a student typically embarked on a university career which was by and large taught and organized for him/her within a relatively autonomous and sometimes quite small section of the university. In order to broaden the curriculum and to cater for student choice, the system of units which characterizes American education has been introduced and students are now able to put together course units themselves. They then graduate in a 'General Arts' program. In principle a student is free to mix Celtic Studies, Music, Art History as he pleases; but there are also recognized recommended 'study paths' which are intended to lead to a definite graduate profile.

This development has taken place simultaneously with the general introduction of the 'Two-Phase Structure', said to be based on the 'Anglo Saxon Model', in which (as in U.S.A. and U.K.) there is a clear division between Bachelor and Master's degree programs and (as in U.K.) the time which can be spent on a degree program is limited and subject to conditions, such as successful completion of the first year. In such a context the time which a student can spend on a course element and the chances of success become of crucial importance.

The development of a 'course unit' structure has facilitated the development of course elements in computerlinguistics which students from not only language departments but other departments such as sociology, psychology and so on where communication is important can also usefully incorporate into their study programs. At the same time this new subject area is growing rapidly. There is thus a two-fold increase in scale which has to be managed - an increase in the number of courses offered and an increase in the number or students taking them.

These changes of increased educational provision and demand together with requirements for shorter study time and greater study success come at a time of reduced absolute expenditure in higher education. Were the overall concern of educational managers directed where it ought to be, namely the cost of producing a graduate with skills and knowledge of relevance to the needs of society, then additional support for the establishment of such a programme would be amply justified. But economies are directed to absolute costs, and if innovation is to take place ways have to be found of bringing it about without benefit of extra staff, assistantships or educational support services on an appropriate scale.

2. General Curricular Aims and Activities

Computerlinguistics has been available as a subsidiary subject for students in the University of Utrecht for some ten years. Up to 1982 the students were few, pioneers, with particular interests and talents and high motivation. They were able to cope with an educational program in which the lecture was central and the students' role therein was a passive one, albeit that that was the central, organizing channel of communication for the course. The lecture was supplemented by references, in a number of languages, and the students ironed out the problems for themselves in practical sessions under the supervision of the teacher. While such an approach served well enough until that time, it could not cope with the changes indicated above without a change in the levels students could be expected to achieve.

The starting point for the restructuring of the course was that there would be no diminution of standards, rather students would be called upon to raise their achievement levels. The problem solving approach which was characteristic of the course could only be successful with large numbers and reduced practical supervision time per student by incorporating interaction and feedback into all the course elements, the lecture and the study guide as well as practical sessions. The essential feature of the course whereby students learn to build up their own knowledge and to extend it when obliged to do so in a practical situation was an informal feature of the pre-1982 courses. It is carefully structured into the new courses, so that even when they enrol in large numbers students still learn through problem solving; that is to say, they learn through achieving success in problems which extend them as young researchers are extended, rather than as students preparing for examinations.

Interaction is built into all course elements, the study books, the lectures, and of course the practical sessions. In order that the lectures can become tutorial in nature, the function of main channel of information has been transferred to the study books. Thus a student is called upon first of all to read the relevant chapter in the study book, answering the self-testing questions inserted after each new concept or principle. It is assumed that this has been completed when the students attend the lecture session, which becomes a question and answer period, with questions initiated by students and teacher alike. Since many of these are of the 'Suppose you did so and so' or 'What happens if' kind it goes without saying that the lecture takes place in a computer classroom. Once chapter and lecture have been mastered, the students' understanding of the concepts and principles acquired is tested by the weekly assignment, which is carefully designed to take them not only to the limit of their new learning but one thinking step beyond what has been covered. Cooperation is encouraged, so that few students attempt such assignments wholly alone, although each submits the solution to the problem set in the form of a printout on an individual basis. In this way students are called upon to operate at the highest levels of problem solving from the beginning of the course, and they experience success in doing so. In the long run this approach is much more successful than one often encountered, particularly in computer courses, where students are lulled into false security in the first few sessions and then suddenly find themselves unable to cope.

Each course unit comprises six chapter/lecture/assignment elements, scheduled weekly, comprising about twenty hours work in all for the average student. These six weeks culminate in a final problem to be solved and submitted within two weeks of the end of the last lecture. There is no final examination.

There are other features of general application, but since they would be expected to feature in all computer courses at the present time, they will not be discussed. Students are for example encouraged and supported by the learning materials to acquire good habits of structured programming. They are involved from the beginning in the detection and analysis of errors, and in testing their programs. A further general feature of the computerlinguistics program as a whole is that students are expected to learn a number of programming languages, so that they will not later be hampered by being dependent upon only one. Comparisons are frequently made, and students are expected to learn the strengths and weaknesses of each, with a view to making appropriate choices of programming language at a later stage.

3 The Structure of the Computerlinguistics Program

The subject matter making up computerlinguistics has, as other areas in the Arts Faculty, been divided up into units, known as modules, and arranged in a hierarchical pattern, indicating which courses serve as prerequisites for other courses and how various groupings of modules can be made to correspond to various graduate profiles. These are shown in Figure 1. It will be noted that the various study paths can all lead to supervised work experience and/or an individualized research project. Such a structuring is to some extent bound to be forced and artificial.

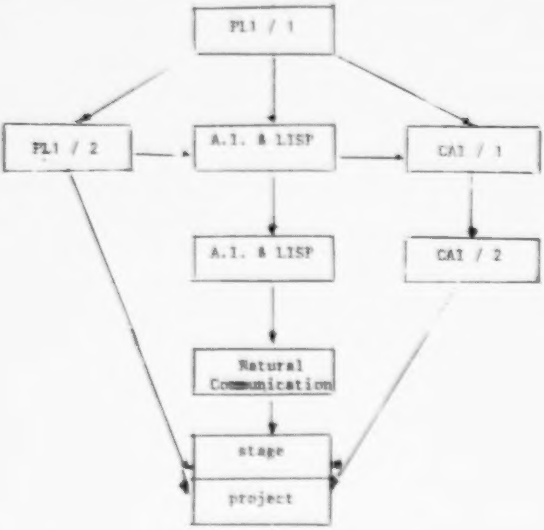
PL1 / 1
PL1 / 2
A.I. & LISP
CAI / 1
A.I. & LISP
CAI / 2
Natural Communication
stage
project

Figure 1. Hierarchic Structure of Modules in Computerlinguistics

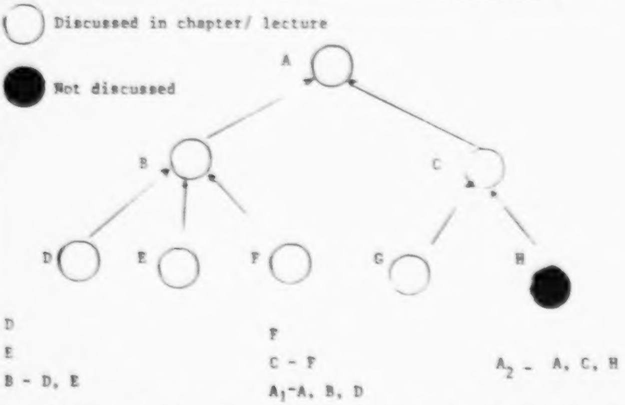
Discussed in chapter/ lecture
Not discussed
A
B
C
D
E
F
G
H
D
E
B - D, E
F
C - F
A_1-A, B, D
A_2 - A, C, H

Figure 2. Test questions per chapter including one thinking step further

A subject such as computerlinguistics - indeed almost any subject - can best be represented by a network linking associated concepts and principles, where it is by no means clear where one should begin or end with either teaching or learning and indeed the poor student seems called upon to get to know everything at once. Some curriculum developers adopt a spiral approach, returning to topics again and again, refining them at every reiteration.

It is a fundamental assumption of the course development approach of the authors that clear objectives and a hierarchical structure can always be realised if the final objective is defined in terms of the ability to solve a certain class of problems and the intervening stages are generated by repeatedly asking the question 'what does the student have to know in order to master this principle?'. This will be recognized as a quotation from Gagne (1965, pp 151-152), who called the hierarchy so generated 'a structure of organized knowledge about a topic'. The difference in the approach taken here is that the authors recognize that the structure is to some extent imposed and determined by the nature of the final problem or class of problems, and the choice of a different class of problems on the same topic will generate a different hierarchy. Ferraris et al have demonstrated this, taking as a simple example the concepts v (velocity), t (time), s (distance) and a (acceleration) in uniformly accelerated motion as a topic. They form a complex network of interrelationships, which only takes on an hierchical form when a decision is made as to the final class of problem. (Ferraris, Midoro and Olimpo, 1984). There is a further difference in that the authors do not reject a spiral approach, which has a bearing on their conception of modular structure.

(Detailed examples of course structure and course materials will be available for the presentation. Boot & Hawkins, 1982, 1983, 1984a.)

SOME MORE ASSERTIONS, CONCERNING MODULAR COURSE CONSTRUCTION

The authors have made their position clear on this topic elsewhere (Boot and Hawkins, 1984b). The term has become distorted since it was originally defined as for example by Goldschmid and Goldschmid (1973), and we have sought in considerable measure to return to its original conception - that it is more or less self contained, emphasizes self study, incorporates feedback and is directed to explicitly described prestated objectives. Of these, only too often only the first of these properties remains intact in current use of the term, and indeed a module is often construed as a piece of instruction of a certain duration, so that it is indistinguishable from a course in American usage. It is necessary at this time to emphasize - indeed, to reiterate - that modules should have the following properties:

1. A module should have system characteristics, and should serve as and incorporate subsystem(s) of a system, including objectives and feedback.

2. Modules are relatively self contained.

3. Modules are relatively self instructional.

4. Modules provide a secure support for creative, interactive teaching, not a constraint.

AN EFFECTIVE PRODUCTION SYSTEM

These further properties of modules are relevant to this topic.

5. They incorporate step wise (trial and modify) course development strategies. Each set of study materials goes through three trials before being finalized.

6. They can be prepared as you go along, provided a basic draft is ready, and the involvement of students in concurrent evaluation and modification is of mutual benefit.

It has to be said however that the present level of production has depended on a commitment from a small, self sufficient team, complete with word processor and able to act as their own graphic artists and illustrators, complemented when the pressure demanded it by a small group of students content to be rewarded by experience and credit rather than payment. Some of these deserve to contribute to the teaching and research aspects of this new subject area. If and when they do, their experience should lead them also to undertake their teaching in an interactive, problem solving manner.

Prior to 1982, about seven students per year studied computerlinguistics. Sometimes six months was needed for an assignment concluding a course, sometimes it was never completed. Since the introduction of the new system, no students have failed to complete assignments successfully, within two weeks. At the time of writing (January 1985) 75 students are enrolled, and it is evident from enquiries that growth in demand continues.

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THE PRACTICAL COMPONENT OF THE TRAINING PROGRAMME OF STUDENT TEACHERS BY MEANS OF DISTANCE EDUCATION

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1. INTRODUCTION

It is sometimes said that it is impossible to train teachers through teletuition because of the problem of coping with the more practical aspects of the course. Although the theory of education may be dealt with very adequately by means of tuition through the written word, training in the application of this background knowledge in the actual classroom situation with no or very little face-to-face contact between lecturers and students, creates a problem which must be overcome if this initial training of student teachers is to be regarded as successful.

The University of South Africa, established in 1873, is not only one of the oldest distance education Universities in the world, but is also one of the biggest - 63 000 students were enrolled in 1984. Tuition is available to students located all over the country - some are nearly 2 000 kilometers from the campus. Students are drawn from all races and all walks of life. The University offers adults the opportunity of improving their academic qualifications without withdrawing manpower from commercial, industrial or professional activities. Since the need for properly trained teachers is ever increasing, the task of the University in training future teachers is of the utmost importance. To accomplish this, the following strategy with regard to the practical component of teacher education is being followed at present.

2. PREPARATION FOR MICROTEACHING

Lecturers from the Faculty of Education visit the main centres in the country once or twice a year to conduct discussion groups on various aspects of the course for the post graduate Higher Education Diploma. During these visits provision is made for each student to conduct at least one microteaching lesson. It is, however, difficult to explain the concept of microteaching beforehand verbally to students to ensure that they clearly understand what is expected of them.

It was therefore decided to make videotapes of a few typical microteaching lessons, and to send copies of these to various regional offices of the University in the bigger centres throughout the country. Students are then required to meet at the regional office on a specific day. A so-called "con=ference telephone" link with lecturers at the University in Pretoria is esta=blished and a particular microlesson is played back simultaneously at the Uni=versity head office as well as in the regional centres. The tape can be stop=ped, replayed and discussed in detail so that students can ascertain exactly how they must plan their lessons. From the feedback from students, it is clear that they find this experience very meaningful.

3. MICROTEACHING

Various teaching skills (such as questioning, communication, sensitivity, starting and finishing a lesson, interest and variety) have been identified in several microteaching programmes during the last 20 years (Wragg, 1974, p.112-114). However, due to time constraints and large numbers of students, it is not possible to concentrate on each of these skills individually during the visits of lecturers to students. Where no more than one microteaching les=son is expected from each student, one is forced to use a more global approach where the lesson as a whole is evaluated. The following aspects are rated on a five-point scale: achieving of objectives; the use of teaching/learning aids; the use of questions and the application of didactic principles such as class motivation, pupil activity, individualisation and the development of subject matter (Yule, Steyn, Soobiah & Davies, 1983, p.116).

Evaluation is done after the lesson has been taught. Wherever possible a vi=deorecording is made. Even an audio-tape feedback, however, is of the utmost importance for self evaluation of the student in the discussion that follows. Because peers are present as members of the class, they can contribute sub=stantially to the in depth and usually very interesting discussion that is conducted by the supervising lecturer. More or less 50 percent of the Higher Education Diploma students have already had some teaching experience, and this, coupled with the fact that the average age of the Education students at the University of South Africa is 31 (Kilpert, 1984, p.4), is mainly responsible for the high standard of comment and suggestions for improvement of a parti=cular microteaching lesson. Although it is a pity that students are restricted to only one microteaching opportunity, they regard this as one of the most worthwhile experiences of their entire course.

4. LESSONS ON AUDIO-TAPE

One of the assignments of students in the subject didactics (method) course is to plan a lesson for any class in the secondary school using any part of the school syllabus for that particular subject. This must be done according to a given scheme in the tutorial matter. The lesson must then be taught to a class after arrangements have been made with the local high school. A recording on audio-tape must be made of the whole lesson.

The student is requested to listen to the tape afterwards, and must then write commentary on the degree of success of his own presentation. As frame of reference for this self-evaluation exercise the student is referred to the same mark sheet which will eventually be used by his examiners for the final practice teaching test.

Eventually the initial lesson plan, the tape recording as well as the written commentary on the lesson must be sent to the University for the final perusal of the lecturer. Although it is very time consuming to listen to a 30 minute tape as well as studying the lesson scheme and self-evaluation report before actually being in a position to comment on the teaching performance of the student, this exercise succeeds in eliminating the distance between the student and his tutor. The latter is in an excellent position to judge the proficiency of the student in a real teaching situation. The commentary is directed at the performance of the single student, and this, in fact, is individualised instruction in the true sense of the word. But perhaps the most important advantage of this whole exercise lies in the fact that the student has the opportunity of looking critically at his own teaching performance in front of a lively bunch of school children. No wonder then that most students are much more severe in their criticism of themselves than anyone else would be!

In recent research being carried out regarding microteaching in teacher training through distance education, it has been recommended that more of the above mentioned auto-didactic approach be implemented (Steyn, 1984, p.182-285). The idea is that certain skills would be demonstrated by a teacher in a series of microteaching lessons on audio-tape. After having had the opportunity of studying these in conjunction with detailed notes in a study guide, the student would be required to demonstrate one or two of the skills in a micro-lesson in front of a limited number of pupils. After listening to the tape recording of the lesson, the student would have to evaluate his own performance by completing a check list and/or inter-action analysis schedule. If necessary the lesson could be re-planned and re-taught before again being evaluated. Finally the lecturer concerned would receive the tape of the final lesson, completed evaluation forms and comment by the student.

Although there has as yet been no opportunity of putting this procedure into practice, there is no doubt that the idea of self-instruction and self-evaluation is an extremely viable one.

5. PRACTICE TEACHING IN SCHOOL

5.1 The first objective with the ten week period of school-based practice teaching, is to acquaint the student with the most important activities taking place in a modern school over-and-above the normal teaching in the classroom. At the University of South Africa, this aspect is at present being handled as follows. A number of assignments have been drafted, certain aspects of which the student is required to investigate on his own. This creates a further opportunity of bridging the gap between theory and practice in teacher education since students in each case are referred to certain relevant sections of the different part disciplines of Education already studied.

Examples of the assignments set, are as follows (University of South Africa, PRACTI-G/101/85, p.10-15):

Assignment 1

During the first five days of your teaching practice, you are expected to spend a full day in a standard 6, 7, 8, 9 and 10 class. Having done so, you must then write a report on the following aspects and discuss the differences between the children in each standard regarding
(a) physical development
(b) emotional stability
(c) socialisation

Assignment 2

After consulting the people concerned in the school, write a report on freedom and discipline under the following headings:

(a) discipline within the classroom

(b) discipline in the school

(c) participation in decision-making, with reference to

  (i) the pupil council (prefects)

  (ii) class captains

Assignment 3

Discuss the function of the school assembly with reference to the following aspects:

(a) cultural forming

(b) religious practice

(c) the development of an esprit de corps

Assignment 4

Make a thorough survey of all the cultural activities and societies in which pupils of the school may participate.

(a) What percentage of pupils are actively involved?

(b) Discuss the contribution of both teachers and pupils to the smooth running of these extra-curricular activities.

(c) State your views on the contribution of these activities to the development of the child.

Assignment 5

(a) Indicate how a gifted child can be identified at school.

(b) Identify a gifted child and establish:

  (i) if he is progressing according to his abilities

  (ii) in which way his potential is developed by various teachers (refer in particular to the school library in this regard)

Assignment 6

Select a teacher who has achieved positive results with regard to the aspects set out below and write a short motivation for your choice.

(a) The implementation of the various didactic principles in the class
(b) Contact with the pupils
(c) Meaningful lesson preparation
(d) The use of teaching-learning aids

Assignment 7

Study the function of the school library as a media centre in the school in which you do your teaching practice. Refer to

(a) various types of teaching aids in the school and the quantity of each type
(b) the way in which the apparatus is used
(c) the control of the apparatus
(d) the problems experienced in using the media

Assignment 8

Write a report on the relationship between the parents and the school. In particular pay attention to

(a) the part played by parents in the appointment of teachers
(b) the rights of the parents with respect to matters such as methods of teaching, internal school discipline and religious instruction

5.2 The second objective with the period of practice teaching, is to provide the opportunity for real teaching experience. The lessons must be planned according to specific guidelines, and must then be presented in the presence of the teacher responsible for the particular subject. The latter is required to evaluate the lesson according to a five point scale, to comment in writing on how well the student performed, and to discuss the most important strong and weak points of the lesson with the student. A total of ten lessons in each of his two school subjects must be conducted by the student in this fashion.

At the end of the period of teaching practice, the student must sit for two practical examinations with the school principal and the senior subject teacher acting as examiners. An extended evaluation form with full instructions is made available to the examiners.

All the particulars regarding the teaching practice, the assignments, the schemes for the planning of the lessons and the final teaching tests have been incorporated in a work book. Space is also provided for the student to comment on all aspects of the practice teaching.

From what has been said thus far in connection with the period of school-based practice teaching, it is clear that students are to a large extent expected to work independently. The detailed instructions and thorough preparation beforehand, however, seem to brief them sufficiently so that they can benefit from this experience. The following comment from students endorses this statement:

- I enjoyed my practice teaching and I learned a lot about the school programme.
- The practice teaching proved to be a very worthwhile and gratifying experience.
- I had to evaluate my style of teaching and this proved to be a fascinating experience.
- The assignments really made me think about aspects of school which I had not considered before.
- These assignments are an excellent help in integrating theoretical knowledge and practical experience.

6. RÉSUMÉ

Modern curriculum planners agree that both theory and practice are important when considering training programmes for most professions. This is particularly true in the case of teacher education. There is, in fact, a very special link between theory and practice. In the words of Dewing: "... good practice is based on sound theory and sound theory has its constant pragmatic justification in successful practice" (1931, p.iv).

Distance education at tertiary level confronts lecturers with a special challenge if the practical component of the training programme of student teachers is taken into consideration. It is possible, however, to meet this challenge by means of special measures. If carefully implemented, these can make a considerable difference to the way in which teachers are trained by means of teletuition. Without doubt the pre-service training of teachers by means of correspondence education is of the utmost importance, especially in those countries where there is a severe shortage of qualified teachers.

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EVALUATION OF INDEPENDENT
STUDY IN AN EXTERNAL DEGREE PROGRAM

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It has been said that perhaps the greatest problem with independent study is not that students will fail, but that they will not complete the work. The lack of interaction with and feedback from an instructor and classmates is thought to foster a learning environment that places too much responsibility upon the learner. Thus, independent study has become the domain of the adult student. Because of greater acceptance of responsibility for their own active participation in the learning process, adult students have been considered the chief beneficiaries of most forms of independent study.

For ten years, Central Michigan University's Individualized Degree Program for adult students seeking undergraduate degrees has emphasized independent study as the principal learning strategy. A number of University classroom-based courses have been adapted to a self-study format enabling students in the Program to complete course requirements "at home." The adult student enrollment is distributed all over the State of Michigan.

Characteristics of Learning Packages

These "Learning Packages," as they are called, are highly programmed and content oriented. Students are directed through a course of study by a study guide which prescribes the exercises to be completed, material to be read, projects to be done, and taped lectures to be heard. The "Packages" are based upon "mastery" learning: Student progress is determined by demonstration of a competency level needed to proceed to more advanced work. Tests proctored at the location of the student are used to measure whether competency levels have been met.

The major features of the "Learning Package" are illustrated in Figure 1. Learning Packages represent a considerable advance over the more traditional "correspondence courses." Instructional developers, working with subject matter specialists, have transformed traditional classroom courses into self-instructional learning systems that are truly comprehensive. Student dependency on campus contact for grading of papers and test-taking has been minimized. Local test proctors grade the tests and disclose the outcomes at the times tests are taken. Office staff, working within set frameworks, perform a limited grading and advising role similar to that of teaching assistants. Therefore, students are not held up waiting for test results or instructions before proceeding.

FIGURE 1
Major Features of Learning Packages

Learning Package Course Title	Hours	Semester Projects	Papers and/or Exams	Proctor Required	Pre-requisites
ACC 201	3	None	3 Short Answer	Yes	Yes
ACC 221	3	None	3 Multiple Choice	Yes	Yes
ENG 303	3	Resume Business Letters Reports	One-End of Unit One	No	Yes
ENG 349	3	None	3	Yes	No
FIN 332	3	None	3 Short Answer	Yes	Yes
GEO 121	3	None	2 Multiple Choice	Yes	No
HES 520	3	6 Sets of Exercises 7 Case Assignments	2 Multiple Choice	Yes	No
JRN 350	3	4 Projects	5 Multiple Choice	Yes	No
LIB 197	1	None	3 Multiple Choice and Short Answer	Yes	No
MGT 312	3	3 Exercises 4 Case Assignments	3 Multiple Choice	Yes	No
MKT 300	3	None	3 Short Answer	Yes	Yes
PSY 330	3	None	8 Multiple Choice	Yes	No

Appendix A contains full course titles. Three courses are not included here because they are now in revision and are subject to changes: HES 317, Community Health; ISA 221, Introduction to Data Processing; and MGT 348, Dynamics of Organizational Behavior.

Learning Strategy Relationship to Degree Program

Central Michigan University's Individualized Degree Program provides adults with an opportunity to complete undergraduate degree requirements in either management and supervision, community development (a program emphasizing community or social services), or health care administration. No one learning strategy is employed exclusively by all Individualized Degree Program students. In fact, a student initiated "individualized" study format called the Planned Experience and evaluation of life experiences for potential credit are possible as well, but are not the focus of this report. As the Program has developed, the greatest use by far has been made of the learning packages and, to a lesser extent, correspondence courses. See Appendixes A and B for listings of the number of registrations in 1983-84 for Learning Packages and Correspondence Study Courses.

Need to Evaluate Learning Package Outcomes

Until 1982, learning package courses were administered on a rolling registration basis. Students could register for a course at any time from among 20 courses offered. They were allowed one year to complete each course with the possibility of a one year time extension. While no systematic data are available to support the concern, it was felt that the time given was too extended and the completion rates were too low. We simply did not know how such a seemingly long period to develop mastery of a particular course's competencies was affecting the learning process.

Since 1982, a selection of learning package courses has been offered on a pre-registration basis for each of three, sixteen-week periods a year. For students who cannot complete the course requirements within the initial sixteen-week period, one time extension per course up to sixteen additional weeks may be granted upon request. Students who are unable to complete a learning package in thirty-two weeks receive a permanent grade of "Incomplete." They would then have to retake the course if they ever wanted to complete it.

After two years' experience with the revised system for administration of the packages, data were compiled for the students who registered for one or more learning package and/or correspondence study course during the 1983-84 academic year. Some data were also collected for IDP students who registered for classroom course work and used for comparisons.

Nearly 1000 student transcripts were examined. Approximately 125 of the transcripts showed no recorded entries, indicating that the students were too recently admitted to be considered in the study. The areas investigated included:

1. The number of students overall in 1983-84 who registered for one or more independent study: Learning Package or Correspondence Course. In addition, the number of students were identified who registered for classroom-based courses.
2. Overall completion rates for students taking learning packages, correspondence study courses and classroom courses.
3. Specific course completion rates for learning packages and correspondence study.
4. Distribution of grades for learning packages, correspondence study courses and classroom courses.
5. Average number of courses signed up for by students in the year.
6. Male-Female ratio of course registrations.

A presentation of these data will be made followed by some general discussion, observations and conclusions.

Independent Study Courses Taken

During the 1983-84 academic year, 277 students registered for 14 separate learning packages and 26 correspondence courses. A total of 405 learning packages and 73 correspondence courses were undertaken. (See Appendixes A and B)

In contrast, 53 students signed up for 162 on-campus or off-campus classes. Therefore, a total of 314 students took a total of 642 courses during the year. Table 1 outlines the numbers of students according to the learning format registered for.

TABLE 1
Number of Students Registering for Course Work by Learning Format
1983-84

Learning Format	No. of Students Registered	Percent
Combination of Learning Packages, Correspondence, and/or Classroom Courses	42	13.4
Learning Package Only	212	67.5
Correspondence Study Only	23	7.3
Classroom Only	37	11.8
TOTAL NUMBER OF STUDENTS	314	100.0

The dominance of learning package courses in the Program can readily be seen. Slightly more than two out of three students used learning package courses exclusively.

Grades' Outcomes

With regard to student experience taking the learning package courses, Table 2 shows the grade distributions, including "Withdrawal" and "Incomplete" grades for each course as well as the overall result.

More than two-thirds, or 67.9%, of the 405 learning packages taken were successfully completed at a passing grade during the academic year. More than a third, or 37.8%, of the 405 courses were completed at the grade of "A" or "A-." Only one failing grade was recorded, while 7.4% of the courses ended in withdrawal. Moreover, it should be noted that most of the courses for which "Incomplete" grades were given will be completed during the extension periods granted. Some will lapse into permanent "Incompletes." Thus, the successful completion rate is probably much higher now for the courses taken during the period.

In comparison, 75.3% of the correspondence courses taken were successfully completed for a passing grade. Students are given nine months to complete correspondence courses with a possible three-month extension. However, unlike learning packages, no "Incomplete" grades are given. Consequently, nearly 11% (eight courses) of the correspondence courses were graded as failing, while 14% (ten courses) resulted in withdrawals.

The grades of "A" or "A-" occurred in 34 courses, or 46.5%, of the 73 correspondence courses taken. This is nearly nine percent higher than the learning package experience.

Because classroom-based instruction is frequently cited for its high rate of student completion, data were extracted for the 53 IDP students who opted to take on-or off-campus Central Michigan classes during 1983-84. A total of 162 distinct courses were identified. Only 20, 12.3%, resulted in "Withdrawals" or "Incompletes," and, surprisingly, there were no failing grades. Therefore, classroom instruction appears to sustain its reputation for the highest successful completion rate of nearly 88% in comparison with the 75.3% for correspondence courses and nearly 68% for learning packages during the period studied. Furthermore, 45.1% (73 of 162 courses) classroom

TABLE 2

Grades Distribution for 1983-84 Learning Package Courses

	GRADE OUTCOMES PER COURSE*															
	A Grades		B Grades		C Grades		D Grades		E Grades		With-drawals		Incom-pletes**		Totals	
Learning Packages Course Titles	No.	%	No.	%	No.	%	No	%	No.	%	No.	%	No.	%	No	%
Financial Accounting	2	12.5	3	18.75	1	6.25	1	6.25			3	18.75	6	37.5	16	100.
Managerial Accounting	13	56.5	2	8.7	1	4.4					1	4.4	6	26.0	23	100.
Technical & Professional Report Writing	25	39.1	13	20.4	2	3.0					2	3.1	22	34.4	64	100.
Shakespeare	4	13.8	8	27.6	6	20.7					4	13.8	7	24.1	29	100.
Cultures of the World	8	24.2	16	48.5	2	6.1					2	6.1	5	15.1	33	100.
Community Health	5	25.0	13	65.0	1	5.0							1	5.0	20	100.
Introduction to Data Processing	2	10.0	3	15.0	2	10.0					5	25.0	8	40.0	20	100.
Public Relations Principles & Practices	33	54.1	12	19.7							5	8.2	11	18.0	61	100.
Managerial Finance	16	30.7	19	36.5	4	7.7					5	9.7	8	15.4	52	100.
Introduction to the Library	11	50.0	5	22.7	1	4.6							5	22.7	22	100.
Administration	5	50.0	1	10.0									4	40.0	10	100.
Dynamics of Organizational Behavior	13	38.3	3	8.8	1	2.9					2	5.9	15	44.1	34	100.
Introduction to Marketing	4	100.0													4	100.
Social Psychology	12	70.6	2	11.7					1	5.9	1	5.9	1	5.9	17	100.
TOTAL NO./ %	153/	37.8	100/	24.7	21/	5.2	1/	.2	1/	.2	30/	7.4	99/	24.5	405/	100.

*Grades A through D encompass a range including "minuses" to "plusses."
**Incompletes include both the temporary and permanent "I."

courses were awarded the grade of "A" or "A-." This was certainly higher than the learning package courses' 37.8% and nearly as high as correspondence courses' 46.6%.

Average Course Loads

Of the 314 IDP students who registered for course work in 1983-84, 277 took either learning packages, correspondence study or some combination. A total of 478 independent study courses was generated. Overall, each of the 277 students took approximately two courses during the year. Table 3 indicates the course load distribution:

TABLE 3
Average Number of Learning Package and Correspondence Study Courses
Taken by Students in 1983-84

No. of Students.	No. of Courses Taken
149	1
78	2
22	3
21	4
1	5
6	6 or more
277	

Men Vs. Women

Finally, one of the surprising outcomes of this study was the revelation that nearly 61% of the students taking independent study and 77% of those undertaking classroom work were women students. This proportion is considerably higher than the proportion of women represented in the program which is approximately 49%. Why women appear to be more active cannot be answered by this study, but it does pose a significant question for future investigation.

CONCLUSION

From these data, it would appear the learning package experience approaches that of classroom instruction, especially when the successful completion data for the Learning Packages is expected to improve further and narrow the gap.

It is also evident that learning packages offered on a 16 week schedule are enjoying relatively good completion rates. The adult students in the program have accepted responsibility for self-instruction, at least those who undertook activity.

Further study is needed to determine the great difference in activity level between men and women as evidenced by those who undertook course work in 1983-84. Are there any inherent qualities in the packages that appeal more to women than men? Or is there a scheduling difficulty? Or do men have less time to give?

One final conclusion: Of the 875 IDP students who were potentially active in 1983-84, the 314 who took some kind of course work represented approximately 36% of students. It is true that these figures do not reflect all possible activity in the Program. Other activity may include preparation of experiential learning portfolios, attendance of classes at other institutions like community colleges for some course work, or "individualized" project activity. However, a question may be raised about whether an introduction to the taking of independent study in the Program would generate higher activity levels. At present, planning efforts are underway to provide newly admitted students with an introduction to independent learning as part of an overall orientation program.

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APPENDIX A
1983-84 Registrations Per Course
Learning Packages

		Number
ACC 201	Financial Accounting	16
ACC 221	Managerial Accounting	23
ENG 303	Technical and Professional Report Writing	64
ENG 349	Shakespeare	29
FIN 332	Managerial Finance	52
GEO 121	Cultures of the World	33
HES 317	Community Health	20
ISA 221	Introduction to Data Processing	20
JRN 350	Public Relations Principles and Practices	61
LIB 197	Introduction to the Library	22
MGT 312	Administration	10
MGT 348	Dynamics of Organizational Behavior	34
MKT 300	Introduction to Marketing	4
PSY 330	Social Psychology	17
		405

APPENDIX B
1983-84 Registration Per Course
Correspondence Study

		Number
ACC 201*	Financial Accounting	2
ACC 221*	Managerial Accounting	1
ART 125	Understanding Art	1
BIO 240	Conservation of Natural Resources	1
BIO 328	Human Animal	1
BIO 338	Human Ecology	2
DAN 530	History of Dance	1
ECO 202*	Principles of Economics II	1
ENG 252	American Literature	1
ENG 271	Modern Grammar	2
ESC 201	Weather	1
HES 317*	Community Health	6
HES 352	Environmental Health	8
HST 322	Westward Movement in America	2
IPC 366	Persuasion	5
MTH 116	Mathematics for Business 1	1
MTH 282	Introduction to Statistics	1
PSC 106	Introduction to American Government and Politics	1
SOC 100	Introductory Sociology	1
SOC 213	Introduction to Human Sexuality	1
SOC 311	Educational Sociology	1
SOC 312	Sociology of Health and Illness	6
SOC 319	Religion in Society	10
SOC 323	Minorities	6
SOC 411	The Family	9
TAL 386	History of Drama and Theater 1	1
		73

*Different form of course also available as Learning Package

TEACHING VALUES AND ATTITUDES

FRIDAY, 5 JULY

1400 - 1530

CAN CHANGES IN PROFESSIONAL ATTITUDES BE CATALYZED BY COURSEWORK IN SOCIAL FOUNDATIONS OF EDUCATION

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INTRODUCTION

The trend to place increased emphasis on the social foundations of education in coursework for teachers can be observed by anyone who opens a current college catalogue. Most schools of education offer several courses, some only one, generally covering such subject matter content as the educator's personal philosophy of education, his function as a citizen, his obligation to intereact with community groups, and his responsibility to the student. Most states require this type of course credit for purposes of teacher certification. The role of the teacher, the purpose of instruction, and the function of education in American society are generally described, lectured upon, read about, and discussed during the sophomore year of a teacher education program, and again on a graduate level.

Since instruction in this particular area is intended to bring about identification with the profession and the individual's acceptance of the teaching role, it becomes imperative to offer these courses in their proper sequence within the prescribed framework of professional preparation. Yet, if this results in development either on a personal or professional plane, such development must be reflected in change. The study reported here was an attempt to gather data on this transformation and to explore the relationships between proper course placement within the curriculum and changes in teacher attitudes.

PROCEDURE

The sample group consisted of thirty-two students, the entire class enrolled in the course "Foundations of Education" at Bucks County Community College, Newtown, Pennsylvania. Of this group nine had some teaching experience, twenty-three majored in education but had never taught, three were male, twenty-nine female. The class met for fifteen 150-minute sessions, during the Fall'68 semester.

During the initial class meeting the first Minnesota Tecaher Attitude Inventory--(MTAI) was administered.[1] During the last class session the same test was once more given to the same thirty-two students. The MTAI was chosen for this study since it is an established instrument, used for many years in the selection of students for teacher preparation and in the selection of teachers for teaching positions. The use of the inventory may be extended to measurement of effectiveness in the area of teacher education. The attitudes that are basic to professional success can be assessed through the 150 questions of this instrument. Validation studies were conducted with various norm groups from 1946-1951, all followed the same general pattern, producing reliability coefficients from .88 to .93.

The structure of the course and the teaching methods used were geared to bring about a maximum of student involvement. Small groups, consisting of two to five persons, were formed on the basis of the interest expressed by the students within the framework of subject matter instruction. Some time was devoted during each class period to group meetings and consultation with the instructor. Group reports, both written and oral, were presented to the class. Question and answer techniques or lecture type presentations were kept at a minimum by the instructor. Group interaction and group decision was emphasized at all times. Representatives from the Pennsylvania Education Association, the Pennsylvania Department of Education and the American Federation of Teachers were asked to speak to the class. Films were shown and other audio-visual materials were shared by the group.

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[1] W.W. Cook, C.H. Leads, R. Callis, Minnesota Teacher Attitude Inventory, The Psychological Corporation, 1951

Some structure was given to the course content through assignments in the textbook "Society and Education".[1] Additional reading was chosen by each student from a list of five titles suggested by the instructor. [2,3,4,5,6] A critical, written evaluation of one of the books was required. Three multiple choice questions were submitted by each student, edited by the instructor and included in three examinations. The final examination consisted of a combination of multiple choice and essay questions.

During the last session the MTAI was administered for the second time. Neither the nature of the test, nor its title, were revealed to the group until all had completed the second test. They were aware of the fact that their individual score would not determine or affect their course grade in any manner, and that a research study was made possible through their cooperation.

FINDINGS

Findings are presented separately for two groups. The first group composed of those individuals who were working as assistant teachers, aides, and Sunday School teachers while they were enrolled as full-time or part-time students. Individuals in the second group had not yet started their teaching careers and were employed in a variety of vocations, as secretaries, nurses and waitresses while they were full-time or part-time students. All data presented are grouped into these two classes.

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[1] R. Havighurst, B. Neugarten, Society and Education, Second Edition (Allyn and Bacon, 1962).

[2] J. Barzun, Teacher in America (Boston, Little, Brown, 1945).

[3] J.B. Conant. The Education of American Teachers (McGraw Hill, 1963).

[4] G. Highet, The Art of Teaching (Knopf, 1950).

[5] B. Kaufman, Up The Down Staircase (Prentice-Hall, 1964)

[6] M. Lieberman, The Future of Public Education (University of Chicago Press, 1960).

The MTAI is arranged so that a high score signifies a greater potential for teacing success. An effective teacher may be defined as a professional who works harmoniously with pupils in an atmosphere of cooperative endeavor, and is interested and happy in his work.

Figure 1 represents the MTAI test-retest scores of the teacher group. The flatter of the two curves depicts the first administration of the test, the dotted, peaked curve shows the results of the retest. The data were subjected to the Wilcoxon Signed Ranks Test of Differences.[1]

TABLE 1
WILCOXON's SIGNED RANKS TEST OF DIFFERENCES
FOR THE TEACHER GROUP

Student Number	First MTAI Scores	Second MTAI Scores	d	Rank of d	Rank with less frequent sign
1	60	46	14	3	
2	24	-9	33	-6	-6
3	-36	-23	13	2	
4	56	56			
5	24	50	26	5	
6	61	53	8	-1	-1
7	35	52	17	4	
8	33	33			
9	40	40			
					T = 7

Table I shows that there is no significant change for the two MTAI test score of the "teacher" group. This substantiates the findings described in the literature that teaching behavior and teacher attitudes become fixed after exposure to the teaching act.

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[1] S. Siegel, *Nonparametric Statistics*, Chapter 5 (McGraw Hill 1956).

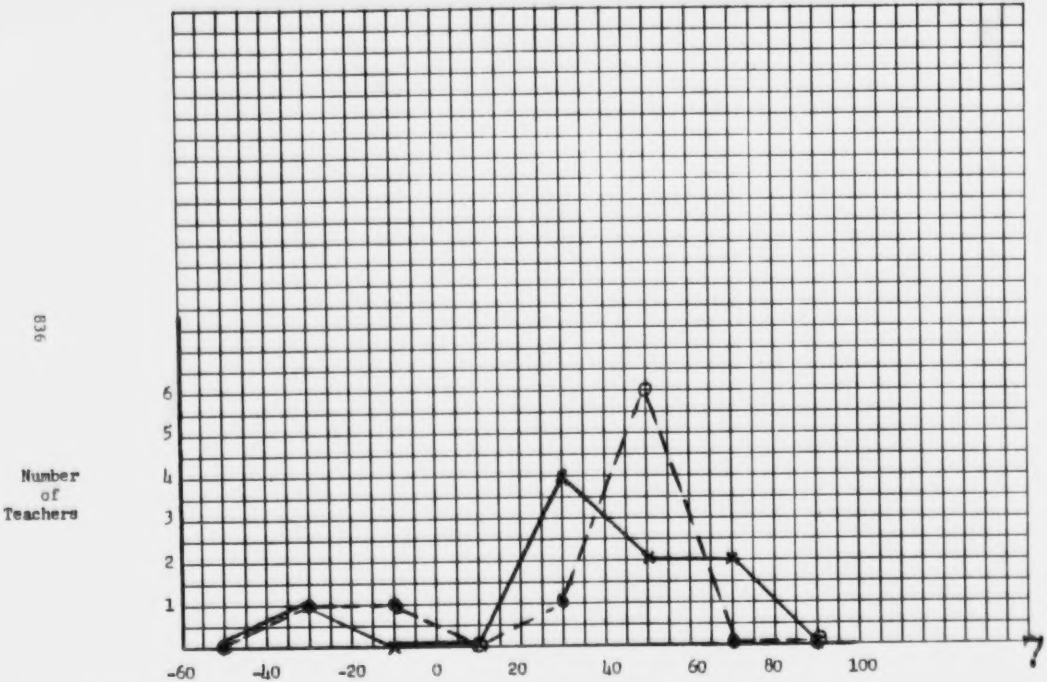

FIGURE 1

M T A I TEST SCORES OF ALL "TEACHERS" FOR FIRST AND SECOND ADMINISTRATION

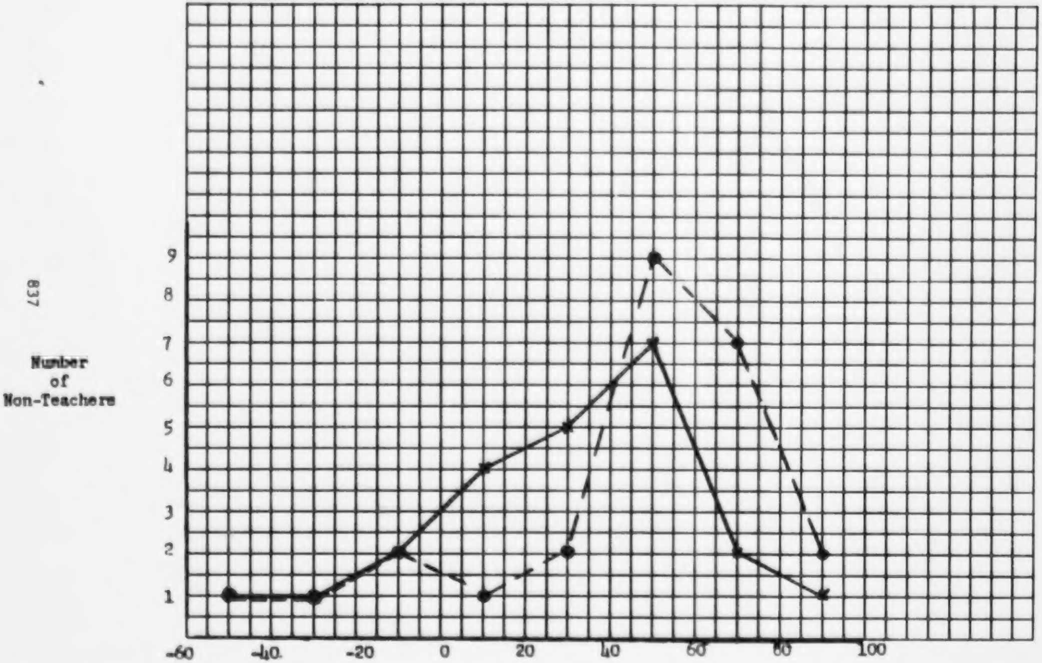

FIGURE 2

M T A I TEST SCORES OF ALL NON-TEACHERS

FOR FIRST AND SECOND ADMINISTRATION

TABLE II

WILCOXON'S SIGNED RANKS TEST OF DIFFERENCES FOR THE NON-"TEACHER" GROUP

Student Number	First MTAI Scores	Second MTAI Scores	d	Rank of d	Rank with less Frequent Sign
1	-35	-35			
2	38	44	6	4.5	
3	7	30	23	16	
4	80	86	6	4.5	
5	3	-19	-22	-15	-15
6	59	62	3	2	
7	- 3	7	10	9	
8	27	64	37	19	
9	49	79	37	17.5	
10	48	49	1	1	
11	47	65	18	12.5	
12	-12	-12			
13	7	47	40	20	
14	31	40	9	8	
15	54	61	7	6.5	
16	49	67	18	12.5	
17	40	44	4	3	
18	0	30	30	17.5	
19	24	42	18	12.5	
20	26	44	18	12.5	
21	70	85	15	10	
22	70	70			
23	-58	-51	7	6.5	
					T = 15*

* T = Significance beyond .01

Table II shows that MTAI score changes for the non-teacher group are significant beyond the .01 level.

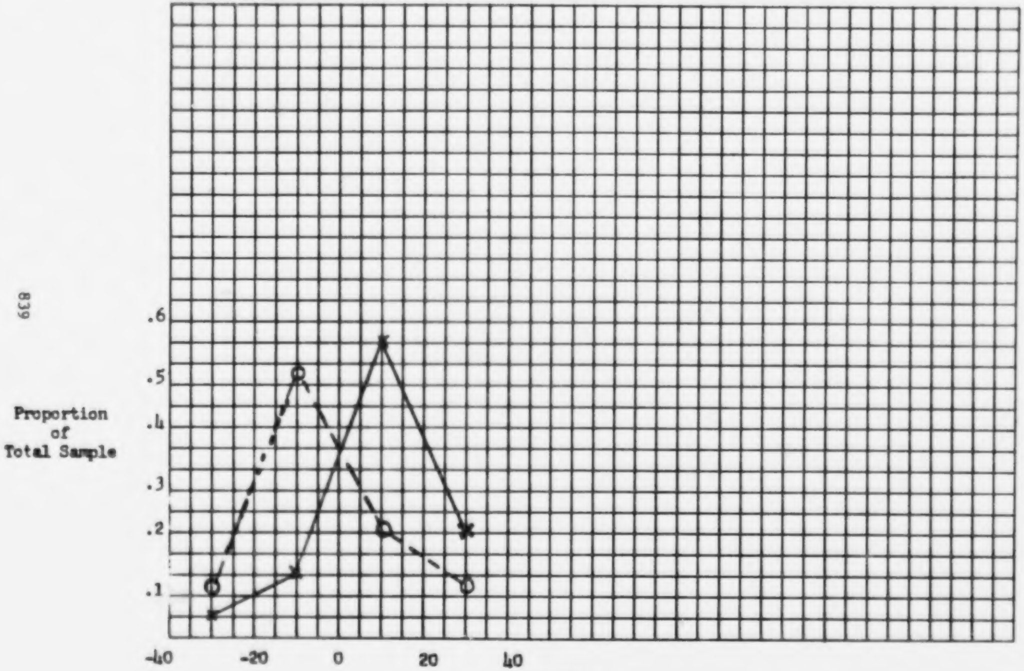

FIGURE 3

M T A I TEST SCORE CHANGES FROM FIRST TO SECOND ADMINISTRATION FOR ALL

A composite or trait of the high scoring population can be developed from the raw data. The typical person was the unmarried, female, non-teacher who was not yet a member of a professional organization. Age did not appear to have a significant bearing on scores, score changes or final grades. Individuals who scored highest in the MTAI also earned the highest grades in the course. Figure 3 demonstrates that changes in attitudes [illegible] occur, and are undoubtedly catalyzed by course content; by exposure to leaders in [illegible] field, by discussion of problem areas of the profession, by the study of factual background material, and through instructor-group interaction. These changes are very much greater in the "non-teaching" group than in the group composed of experienced "teachers".

SUMMARY AND CONCLUSIONS

Twenty three individuals without teaching experience and 9 practicing "teachers" were given MTAI tests before and after attending a course in "Foundations of Education" at Bucks County Community College. The average score change of the "teaching" group was two points while the average score was higher by about one point during the second test. However, for the "non-teacher" group the average score change was thirteen points and the second test score average was twelve points higher. Thus the "non-teaching" group not only changed a great deal more, but they changed far more uniformly in the desirable direction. This is the most important single finding of the study. Evidence that these changes were brought about by the course, rather than by change, need not only be derived from the statistical significance of the data but also from the vast differences of score changes between the two groups making up the class.

Application of these findings is the scheduling of social foundations courses early in the professional preparation of the student; before the actual classroom or student teaching experience, and before attitudes become permanently fixed.

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MEASURED CHANGES IN SOCIAL DISTANCE AS AN OUTCOME OF HIGHER EDUCATION EXPERIENCE

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INTRODUCTION

The role universities play within the culture and society is a focus of theoretical and ideological controversies throughout the world. The controversy is likely to remain intense as the new research reinforces already well known facts that the university education can produce attitudinal changes among students. What these changes should be is at the heart of the controversy. Those ideologically associated with the new left utopianism perceive the ideal university as a source of countercultural values (Flacks, 1971; Marcuse, 1972; Roszak, 1969; Ulam, 1972).

Others see the university as a domain of professions. For them, professions are monopolies of knowledge and metasocial values of professional ethics. Although professionalization of knowledge and work has an important function in a technologically oriented society, it still has some value implications which inspire encountering with ordinary norms and values of social classes and cultural groups. Indeed, this is not a new idea. It could be found in the concept of "socially unattached intelligentsia" (Mannheim, 1968: 155). Mannheim's idea is not unlike contemporary statements that "the essence of professionalism has often been declared to be altruism" (Houle, 1981: 64).

The transcending values arise through restructuring of perceptions about society that students gained through socialization prior to entering the university. In this study, we are concerned with the attitudes of the white majority students in an area of the United States where intolerance toward various racial and ethnic groups has been shown to be greater than in

most other parts of the United States. Because many factions within public universities in America discourage racial prejudice and intolerrance of cultural differences among students- especially those preparing for careers in teaching - reduction of prejudice through intensive study of facts and theories of multi-cultural relations has been an acceptable goal. But, to be successful with such resocialization the university should meet certain conditions of operation. At least such conditions should include:
(1) institutional autonomy from the outside power structures (2) positive sciences of society emancipated from the traditional ideologies (3) fundamental sphere of general knowledge not found in vocational training or narrow professional specializations.

Considering that in the contemporary American society many universities meet conditions of institutional autonomy, emancipation of sciences of society, and at least some support for general knowledge, there is a meaningful context for analyzing whether the process of higher education changes attitudes. In this case the attitudes deal with tolerance toward ethnic groups. This attitude was measured using Bogardus social distance scale among students preparing for careers in primary and secondary education.

THE PROBLEM

In many areas of the United States, teachers are likely to encounter students from different cultural backgrounds. Cultural variations in the classroom are particularly common in the state of Texas where concern for fairness of treatment of all students regardless of their backgrounds prompted the state legislature of Texas to require all prospective teachers to study multi-cultural relations in order to be certified. Even though the legislators were not specific about the content, duration, or orientation of such studies, some universities took this mandate seriously and required their education majors to take a course in ethnic relations as a requirement for graduation. Because this went far beyond the minimum under the law, a controversy has developed whether such a requirement is excessive. Opponents propose modules on culture within other classes in the curriculum of the schools of education. They argue that traditional courses in ethnic relations within sociology are irrelevant to education majors who are already sufficiently tolerant and aware of the minorities they are expected to encounter once they leave the university. They also assert that such courses are too "academic" to have any practical application such as changing the level of prejudice among the prospective teachers.

Proponents on the other hand, point to some literature which shows that selected liberal arts education can reduce prejudice (Hayes, 1979; Lever, 1965, 1967; Mackie, 1974; Mann, 1971; Scarboro, 1980) and that the military programs designed to minimize prejudice seem to be effective (Kieckhaefer, 1976). The argument in Texas remains unsettled because no one has demonstrated that traditional ethnic relations courses in sociology have similar outcomes.

Because lines of demarcation in this controversy are clear, so is an empirical test. To resolve the question of whether or not traditional ethnic relations courses in sociology are beneficial, it behooves those who wish to require such classes to demonstrate first that the level of prejudice among university students is unacceptable for prospective teachers, and secondly that taking of ethnic relations courses will result in the reduction of the level of prejudice. Such research is essential because education per se does not alter the level of tolerance of ethnic diversity (Lever, 1979; Opren, 1971).

These studies show that in systems where ethnic intolerance is an acceptable social norm, education either has no effect or it actually perpetuates prejudices. Indeed similar lack of effectiveness of university education has been observed when universities emphasize vocational curriculum at the expense of liberal arts education (Weiner, 1974).

In this study we hypothesize that the level of prejudice will be higher at the beginning than at the end of a semester among students taking various liberal arts courses. We further hypothesize that in courses where ethnicity and prejudice are the objects of study, the change toward more tolerant attitudes will be greater than in courses where such topics are of only peripheral concern. But, we first compare the initial level of prejudice in our sample to such levels reported in other studies using identical techniques of measurement.

To test these hypotheses, attitudinal change over time is measured using Bogardus Social Distance Scale. The subjects were 103 upper division students in social science classes. These subjects were divided into control groups and the experimental groups. The experimental groups consisted of education majors attending two classes on ethnic relations. Remaining students attended classes in Political Science, and Marriage and the Family. All of the students were given a Bogardus Social Distance Scale in September at the beginning of the semester and then again in December at the end of the semester. The Scale itself was not discussed at anytime in any of the classes until after the second measurement.

Statistical significance of attitudinal changes within the two groups was measured using a paired samples, T-test of significant differences of the means. This procedure required that only the students who were present at the beginning and at the end of the semester be included. Furthermore, for a measurement to count, there had to be a valid response to the same ethnic group at Time One and at Time Two. Because some students did not respond to some ethnic groups either at Time One or at Time Two, the degrees of freedom associated with T-Values in Tables One and Two vary considerably.

RESULTS

Judging by comparisons to other studies shown in Table One, upper division junior and senior college students in our sample exhibited greater levels of prejudice or intolerance toward other ethnic groups than any predominantly white group of college students in America whose level of prejudice has ever been measured using Bogardus Scale. Because there were no significant differences initially among any of the five classes used in this study, we take this evidence to mean that at this university the level of prejudice is higher than usual for American college students.

Table One only depicts the highest level of prejudice measured in any one study because overall means were not comparable. The reason is that some studies included students' own ethnic group, where we used only 17 ethnic groups without respondents' own group. This, of course, exaggerates the overall mean in our sample compared to that in other studies. On the other hand, every ethnic group with the extreme high score in any of the other studies was also included in our study.

Changes in attitudes, as measured by Bogardus Social Distance Scale, are reported in Table Two for the control group and in Table Three for the experimental group. While there is some evidence that attitudes became more tolerant in the control group, generally these changes were not statistically significant. Using the probability level of less than .05 as a criteria of significant change, only two out of seventeen measurements were significant. On a scale of 0 to 7, the mean for Russian changed from 3.3 to 2.6 and for the Mexican it changed from 2.6 to 2.2. Thus, after one semester of liberal education, the scores for control groups remained above average in comparison to measurements reported by other researchers (Table One).

In contrast, the T-Values in the experimental groups were higher than in the control groups for sixteen out of seventeen ethnicities. And, statistical significance was reached at the .05 level or better in nine out of seventeen groups. These results confirm the hypothesis that the study of ethnic relations can reduce the perceived social distance.

CONCLUSION

At the time when importance of general knowledge is challenged at more vocationally oriented universities, we provide statistical evidence, at least with respect to prejudice among prospective teachers, that shows the traditional ethnic relations courses in Sociology can reduce prejudice even among students whose initial levels of prejudice are far higher than usual for American college students. While control groups showed some changes in the same direction, these changes were not statistically significant. In this respect, our findings support the position that education, per se, does not change a person's world view or specifically their attitudes about minority groups. Indeed, our findings are emphatic in this regard, because all of our subjects were upper division students, juniors and seniors, with the majority having considerable exposure to higher education before taking the required course in ethnic relations.

Because we used Bogardus Scale as a measure of perceived social distance, our results were comparable to measurements in other universities over the last sixty years. In comparison to these earlier measurements,we have found that our sample reached higher levels of prejudice than ever before recorded among the white population in America. Yet, just after one semester of traditionally taught sociology of ethnic relations, these same students changed their attitudes to the levels of prejudice comparable to most of the white student groups in related studies.

As we add our results to the growing research on education and ethnic tolerance, we feel confident that ethnic relations studies have an important place in the education of future teachers. Consequently, any university in America or in other ethnically pluralistic society, may do well to consider the role of sociological approach to the study of ethnicity in the curriculum for teacher education.

Table 1

THE MOST EXTREME BOGARDUS SOCIAL DISTANCE SCORES MEASURED FROM 1926 THROUGH 1984

Researcher	Year Data Collected	Sample [1]	Highest Mean Score Measured [2]
Payne, York and Pagan (1974)	1971	White, Female C Students	1.27
Payne, York and Pagan (1974)	1971	White, Male C Students	1.41
Bogardus (1967)	1966	C Students	1.62
Owen, Eisner, McFaul (1981)	1977	C Students	1.63
Brown (1973)	1971	South Texas C Students	1.65
Bogardus (1958)	1956	C Students	1.83
Payne, York and Pagan (1974)	1971	Predominantly White C Students	2.44
Bogardus (1947)	1946	C Students	2.61
Bogardus (1933)	1926	C Students	2.91
Brown (1967)	1966	Ethiopian C Students	3.22
Jedlicka, Katunaric	1984	East Texas White C Students	3.25
Payne, York Pagan (1974)	1971	Black C Students	3.28
Bardis (1961)	1956	Greek H.S. Students	3.30

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1. American students unless indicated otherwise.
C = College H.S. = High School

2. All scores expressed on 0 to 7 scale.

Table 2

BOGARDUS SOCIAL DISTANCE SCORES
FOR TWO POINTS IN TIME: CONTROL GROUP

Ethnic Group	Mean Score Time 1	Mean Score Time 2	Change	T-Value	Degrees of Freedom	2-Tail Significance Level
Russian	3.32	2.65	.67	2.24	51	.029
Pakistanian	3.06	2.54	.52	1.95	49	.057
Ghanian	3.38	2.90	.48	1.59	50	N.S.
French	2.88	2.51	.37	1.31	48	N.S.
Mexican	2.65	2.19	.46	2.16	51	.035
Turkish	2.65	2.24	.41	1.46	50	N.S.
P. Rican	2.43	2.04	.39	1.39	50	N.S.
Venezuelan	2.02	2.00	.02	.07	47	N.S.
Black	1.96	1.84	.12	.54	50	N.S.
Czech	1.96	1.76	.20	.82	50	N.S.
Japanese	1.94	1.86	.08	.32	51	N.S.
Chinese	1.75	1.69	.06	.25	51	N.S.
German	1.29	1.31	-.02	-.08	50	N.S.
Jewish	1.25	1.21	.04	.20	51	N.S.
Hawaiian	1.10	1.21	-.11	-.35	51	N.S.
Italian	.99	1.00	-.01	-.37	51	N.S.
Canadian	.84	.82	.02	.12	50	N.S.

Measurements are based on 0 to 7 scale.

Table 3

BOGARDUS SOCIAL DISTANCE SCORES
FOR TWO POINTS IN TIME: EXPERIMENTAL GROUP

Ethnic Group	Mean Score Time 1	Mean Score Time 2	Change	T-Value	Degrees of Freedom	2-Tail Significance Level
Russian	3.08	1.30	1.78	4.31	36	.0001
French	2.46	1.18	1.28	3.86	37	.001
Ghanian	2.42	1.27	1.15	3.44	32	.002
Pakistan	2.36	1.44	.92	2.99	35	.005
Turkish	2.05	.97	1.08	3.68	36	.001
P. Rican	1.81	1.54	.27	.84	36	N.S.
Mexican	1.74	1.33	.41	1.69	38	.099
Black	1.68	1.25	.43	1.82	39	.08
Venezuelan	1.34	.95	.39	2.18	36	.036
Czech	1.50	.66	.83	2.76	35	.009
Chinese	1.50	.74	.76	3.40	37	.002
Japanese	1.44	.95	.49	2.21	38	.033
Jewish	1.31	.87	.44	1.66	38	N.S.
Hawaiian	.78	.78	.00	.00	37	N.S.
Italian	.74	.43	.31	1.23	38	N.S.
German	.68	.50	.18	.88	37	N.S.
Canadian	.44	.41	.03	.19	38	N.S.

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TEACHING VALUES AND ETHICS IN THE HEALTH AND HUMAN SERVICE FIELDS

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Increased awareness of the ethical conflicts encountered in professional practice has prompted the inclusion of courses on ethics in the academic preparation of students for the health and human service fields.

Such courses have met with resistance. Not to mention the academic administration and committees on curriculum, faculty frequently disdain the teaching of ethics as soft and wasteful. Sensitive to recent severe criticism of academic standards, American educators are more insistent than ever on the priority of the hard sciences (Corey et al, 1984).

Students too resist training in ethical decision-making. A denial of individual responsibility and a sense of "what difference can I make?" results partly from decline of basic reading and writing skills. Many are frightened at the prospect of grappling with their own moral process, largely because the weakness of their language skills prevents them from being in touch with their own thinking. They take refuge in the pursuit of hard facts, objective proof, empirical data, which can be committed to memory and retrieved when elicited by teachers on multiple-choice examinations. The presumed certitude of such study is reassuring to them, while the subjective quality of ethics makes them uncomfortable.

Notwithstanding all the resistance, students in the health and human service fields deserve a thorough orientation in ethics and values, first on the grounds of professional competence which requires that they have the knowledge and analytical ability to discern the roots of ethical dilemmas in the clinical situation; secondly, in order to deal with a broad spectrum of clients, they need to perceive the diversity of value prioritizations without being thrown into confusion; and thirdly, as a preventive action against stress, burn-out, and cynicism which can come to the professional whose value approach remains primitive, rigid, intolerant of ambiguity.

Having looked at some of the resistances to the teaching of ethics in the health and human service fields, it is time to describe the course itself. There has been some debate as to whether ethical issues should be taught in a separate course or should be woven into several courses as the specific issues arise. (Barry, 1982). I have found a separate course preferable, because the process is quite different from other courses, and because not all teachers want to take on the burden of teaching ethics in the midst of their courses. The group cannot be too large, twelve is a good size, permitting mutual exchange and feed-back. The pace cannot be rushed, for each student needs time to work through the process, to struggle for a position consistent with values which become clarified through experience. This requires patience, and in the beginning most of the students are uncomfortable with the ambiguity. They frequently ask "but what is the real answer?" and feel somehow cheated by the response that the argument is worth more than the decision in value conflict. They want facilely resolved conflict. It is very difficult for them to listen to each other. They easily confuse pluralism and relativism. The reductionist approach which they bring to the classroom is reinforced, especially at the graduate level by the "conceptual ghetto" mentality described by Clouser (1980), where they are surrounded by teachers, professionals and fellow students all tending to think the same way. The ethics course demands that they take their own stand, and in the beginning this is a problem.

For this reason, I have found it best to begin the course, not with theories, but with practical problems presented through cases. So we begin with the concrete examples, permitting the students to become accustomed to the ethical issues and to develop their own moral process. After a few weeks this leads to inquiries about ethical theories which are then introduced and critiqued, then I present the model for treating the cases and we spend the rest of the term applying the model to further cases. After the first few classes the students are asked to contribute cases. I have found that actual cases work better than fictional cases which sometimes can give a sense of manipulation or control which is not present in real life. In spite of their earlier resistance, and in spite of continued impatience with themselves and each other, the students manifest great enthusiasm once they come to grips with real cases dealing with practical problems. Most of them are already involved in their professional fields, at least as interns, so they have some experience of the kinds of problems they will face in the clinical situation.

In some instances the cases are presented through role-play. Roles are assigned in advance, representing as far as possible all the moral agents in the case. (See the model, Appendix A) The students study their roles and the positions taken and do whatever research is necessary. The role-play method is very helpful in getting them to see the case through the eye of another. It is particularly advantageous when that other holds a position quite opposed to their own. Role-play is not the only approach. Some students find the use of video equipment helpful. In some cases simple group discussion is used, either with the whole group or breaking up into smaller groups or dyads. Clinical supervision can also provide a format for case presentation. (Childress, 1981)

One of the earliest issues to be addressed is that of client definition. This is a particularly good question because most of the students have never reflected on it. The first take it for granted that the patient is the client, but then through presentation of particular cases see their responsibilities to others at times conflicting with their responsibilities to the client. The pressure of responsibilititties to the patient's family, to their supervisor, the administration, the funding agency, their profession, society, other patients, and even to themselves, makes them aware of the complication of this issue. Specific questions are presented which open up to the students the many fine threads running through something which seemed so simple. The questions give them an opportunity to develop analytic skills. They begin to see more subtle shades of meaning in something which previously they had taken for granted. They learn to look for hidden values, to look with a keener insight into the positions of all the moral agents involved in the situation. As Callahan remarks, their moral imaginations become awakened (1981). Through discussion they are enabled to differ without acrimony, without feeling threatened. At times it is hard to avoid the spirit of debate, of winning and losing, of being right, but by continued practice the group opens up to a more tolerant attitude where each one accepts the ambiguities in the situation and sees the personal responsibility for working through them.

For all these desired changes to take place, what is especially required of the teacher is skill in guiding the group, so that each student gets a chance to work through the analytical process. Some are always quicker and find the slower ones tedious. I tell them this is good practice for working with clients who don't always proceed at a fixed pace. Basically, I find that the cases themselves engage the students at a deep level. Many of them are very poignant and it is quite clear that the students are really torn by the dilemma. With an eye to their professional futures, they begin to appreciate the need for training in ethical decision making.

There are a few problems which deserve a special word of caution. One of these is the use of "rights" language. Students tend to reify rights, to cast ethical dilemmas in terms of competing rights and claims, creating adversarial, litigious models. It is difficult to get them to see how this egregiously limits professional ethics, to see that human service professions have goals which go far beyond defining and patroling client rights. This propensity for rights language reflects a trend in the general culture, and reflects too, another problem, i.e., the confusion between the legal and moral orders. The students want to reduce moral issues to legal issues, absolutizing the legal order and attempting to provide purely procedural resolutions to moral dilemmas.

Allied to the legal/moral confusion is the issue of malpractice and what precisely constitutes malpractice. While this is an area of great interest to the students, they tend to see it entirely as legal liability. Such a narrow definition of malpractice excludes the fuller notion of practicing in the professionally appropriate way, and limits professionalism by a self-protective concern.

A constant source of difficulty for teachers in the health and human service fields is the tendency of the students, following the lead of their professions, to identify with the medical model. A major problem this causes for the teaching of ethics is the over-interest in quantity of life issues and tendency to dismiss quality of life questions as unimportant.

The tendency of the culture in general to over-value the high tech fields and to emphasize high tech aspects of all fields leads at times to a dehumanizing of service delivery. Students do have great awe for high tech methods and need help to see that while technology is an enabler, some of the "can we?" questions need to be followed by "should we?" questions, particularly in areas of human service.

The level of ethical sensitivity in the particular culture of course affects the teaching of ethics in the classroom (McCormick, 1973). Students, too, as a group, are characterized by particular value priorities. A 1984 study by the University of California at Los Angeles found a rise in materialism among college freshmen. To the extent that this is true of students in the health and human service fields, it will surely affect their response to ethical issues in their course work as in their professional careers.

The professions, themselves, are somewhat distrustful of training in ethics, fearing the generation of an exaggerated ethical sensitivity, and the development of young whistleblowers within their ranks. As ethics committees begin to appear in the clinical setting, professional management takes a dim view of more meetings and new issues making further demands on already overburdened staff.

Those of us involved in the teaching of ethics have a preliminary challenge of clarifying what our goals or purposes are. I have encountered a great deal of confusion in this regard. Some confuse ethics with religion and they want no part of it in the classroom. Others are fearful of indoctrination, fear the imposition of a set of values and thereby a restriction of freedom. Still others look upon the teaching of ethics as an attempt to make the students morally good persons.

If these are not our goals, then what are they? The 1980 Report of the Hastings Center specified five goals for the teaching of ethics in higher education(p. 47) namely:

1) stimulating the moral imagination,
2) recognizing ethical issues,
3) developing analytical skills,
4) eliciting a sense of moral obligation and personal responsibility,
5) tolerating and reducing disagreement and ambiguity.

Although the students do not initially acknowledge these goals as their own, gradually they come to recognize the need for a thorough grounding in ethics and values, and these goals do become theirs. They develop a professional attitude towards their practice which includes broader and more basic decision-making standards and the ability to resolve ethical dilemmas in a reasoned and consistent way.

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APPENDIX A

Model for Ethical Case Workup. (Adapted from "Training in Medical Ethics: An Ethical Workup," by David C. Thomasma, in Forum on Medicine, December, 1978, pp.33-36)

Part A (Descriptive)

1. Identify all moral agents involved, indirectly and directly, actively and passively, immediately and remotely, and extenuating circumstances or factors influencing the moral decision.

2. Describe significant value factors for all agents; distin- moral from non-moral values; pinpoint values threatened in the situation.

3. Delineate value conflicts, i.e., all mutually unattainable values, not just a view of simply clear good and clear evil.

Part B (Evaluative)

4. Determine value priorities; give reasons for prioritization in terms of principles, consequences, proportionate weighing of values, of benefits and harms; note extenuating circumstances in exceptional cases.

5. Decide, based on the prioritization; show how the decision best preserves the priorities.

6. Critique the whole process in terms of assumptions, analyses and conclusions. See how a contradictory case could be structured, and what could be learned from a different/opposing analysis.

INTEGRATING ETHICAL ISSUES INTO ENGINEERING COURSEWORK

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Educators of future engineers must assume a broad responsibility for preparing their students for professional employment, because they cannot be content with seeing their students educated in only a subject-specific way. The career environment of the professional requires abilities which cannot be prepared for through narrowly compartmentalized training. To be successful, engineers must be able to communicate effectively in writing and orally; must be able to deal with economic, environmental, and social issues bound up in engineering projects; and must be able to integrate professional issues into the totality of their existence.

The multiplication of knowledge is most commonly cited as the reason why the above goals are today more difficult to achieve than ever before. Students are required to absorb so much information that it becomes impossible to cover all subjects adequately. The limited space available in the curricula makes selectivity inevitable and results in competing demands among the disciplines. Various factions cogently argue for the importance of their own specialities, proposing additional engineering coursework, added emphasis on communications skills, management tools, technology assessment, and ethics. For many, the next logical step is to add one or more years to the curriculum, perhaps an admirable idea, but one which, given the nature of the employment market, is not likely to be implemented in the near future.

Those who advocate a well-rounded engineering education thus seem to be in an untenable position. However, I suspect that the real problem lies not so much in the knowledge explosion, but in the segmentation of the educational process. Many of the skills which engineers will need can successfully be integrated into existing coursework. Programs aimed at enhancing the communications skills of engineers have been particularly effective.[1] If more of engineering education could be integrated in a like manner, the educational process would be more complete, effective, and efficient.

However, two problems arise in this regard: 1) How can instructors become qualified to deal with issues outside their professional expertise, and 2) how can the integration of subject-matters be achieved without detracting from efforts devoted to subject-specific naterial. In the following I will show how the problems can be dealt with in one area, that of professional and ethical concerns. Although the discussion is limited in this way, it clearly has implications for other aspects of a liberally founded technological education.

The underlying assumption of the paper is the conviction that professional and ethical issues should be dealt with in every engineering student's education. The assumption is explicitly enunciated in the standards of the Accreditation Board for Engineering and Technology (ABET), the accrediting agency of engineering programs in the United States.

> An understanding of the ethical, social, and economic considerations in engineering practice is essential for a successful engineering career. Coursework may be provided for this purpose, but as a minimum it should be the responsibility of the engineering faculty to infuse professional concepts into all engineering coursework.[2]

While some colleges in the United States offer courses in professionalism and ethics, they are usually not required.[3] Thus, if discussion of professionalism is not integrated into subject-specific courses, students can avoid dealing with such issues altogether. This, in turn, can have unfortunate consequences for the future of the profession, especially in relation to public trust and to professional autonomy.[4]

Are Ethical Experts Needed?

Many discipline oriented instructors hesitate to introduce ethical and professional issues in their classes, either because they believe that these will be dealt with elsewhere in the curriculum or because they feel lacking in expertise. While unfortunately the former belief is generally not justified, fortunately the latter rests on an unsound basis. Moral issues have never been, and can never be, the exclusive province of only some. All of us need to be concerned with the moral dimension of our existence. For professionals these concerns are all the more pressing, because they will encounter moral perplexities in the course of their professional duties for which their everyday lives have not prepared them and for which they will still be held responsible by society. The professions have a special role in the social fabric, which is one of the reasons that we separate professional education from liberal education in general.[5] Part of the responsibility for adequately preparing future professionals falls on all the teachers involved in professional education.

A major reason why subject-specific faculty shy away from ethical discussions with their students is the complexity of a philosophical approach to ethics. They are faced with a problem anyone attempting to cross disciplinary lines must deal with, immersion into a new set of concepts. While it is true that dealing with ethical theories can be an extremely complex undertaking, theoretically, complexity can largely be avoided in concrete application and case discussion. The fundamentals of ethical theory required as background for discussion of ethical issues as they are related to a specific subject are within the reach of all faculty members. No philosophical theory which radically opposes the inherited conceptions of what actions are right and wrong could expect to be given much credence. Philosophical theories of ethics can be helpful in analyzing moral problems, but lack of detailed acquaintance with them should not prevent one from dealing with these issues, since everyone has to act in the world, whether or not we are trained in moral philosophy. This is of course not to claim that dealing with moral perplexities is easy, with or without a thorough theoretical grounding.

The importance one places on the theoretical dimension of ethics largely depends on one's aims in discussing ethics. The goals enunciated in relation to the discussion of moral issues fall into two broad categories. Philosophers generally emphasize acquaintance with ethical theory, identification of ethical issues, application of ethical theory, and tolerance for ambiguity and disagreement. Engineering professors, on the other hand, generally believe that the goals should include socializing students into professional norms, recognition of role responsibilities, awareness of the nature of the profession, and knowledge that most professionals are ethical. In sum, theory tends to be stressed by those considered to be experts in the field of moral philosophy, while concepts of professionalism are stressed by those who more directly represent the practical life.[6]

While both aims are important for introducing ethics into subject-specific courses, a modified path, one which focuses on the process of rational reflection, is preferable.

Rational Reflection

Many non-philosophers are disturbed by the apparent lack of agreement among philosophers on fundamental issues in ethical theory. As a consequence, students tend to believe that questions of ethics are a matter of mere opinion, that any position is as good as the next. To the contrary, it is in the recognition that not all opinions are of a piece that the concerns of philosophers and of the engineering profession can meet in the classroom.

Philosophers, recognizing that conflicting interpretations exist on the theoretical level, emphasize examining the weaknesses and strengths of theories. They ask their students to become involved in the evaluative process, not because it is arbitrary which theoretical perspective is adopted, but rather because the evaluation needs to be carried out on an individual basis. The examination of ethical theories thus has at least a twofold purpose: to have students become acquainted with them and to require rational justification for the adoption of a particular perspective, which can then be used to evaluate concrete moral issues.

The process of justifying beliefs, rather than the conclusions arrived at, is thus central to philosophical activity. This process can also be applied to the evaluation of proposed actions. Rather than basing the determination of the rightness or wrongness of an action on feelings or parential teaching, students are encouraged to reflect on the whys of their decision. They learn to make use of rational reflection.

This process is not so different from the thought patterns expected of students in engineering classes, except that for the students it does not appear to be as well-founded empirically. This reflects not so much the absence of facts in relation to moral issues, but rather the questionable truth-status of the ethical theories. Therefore, by deemphasizing the theoretical dimension two goals can be achieved: the students must stop relying on an external authority, but they can also gain a certain degree of conviction in their analyses, given that the underlying uncertainty factor is removed. The purpose of a discussion of moral issues is to have students reflect on the moral dimension of engineering issues, to know why they believe, to be able to justify their beliefs, and to deepen their understanding of professionalism beyond that gained from the example set by their instructors.[7] It is, in the final analysis, to learn how to think for themselves on the moral level, just as they must, in order to become successful engineers, learn how to think for themselves in other aspects of their professional existence. All educators preparing students for a career in engineering should aim at the educating of autonomous professionals.[8]

Autonomy as the Goal of Professional Education

The educational process involves not only the passing on of information, but also the development of independent judgment. Advocates of professionalism in engineering have long argued not only for the autonomy of the profession but also, though less forcefully, for the autonomy of the individual professional.[9] Autonomy becomes unacceptable, however, when it is confounded with the possibility of arbitrary and irresponsible action. Thus, along with the exercise of individual judgment must always come an awareness of corresponding obligations. Engineering students must learn to exercise a balanced autonomy in all their activities. It is one of the responsibilities of the profession as a whole, as well as of all engineering educators, to prepare students to exercise autonomy. This is only possible when future engineers are able to take account of the social and ethical concerns which are imbedded in engineering issues.

Yet, ethical considerations are not far removed from subject-specific questions. While the material may differ, the methodology for arriving at adequate judgments is similar and ethical issues can thus be related to the methodology of engineering work. However, unless this is pointed out to students, they may well fail to see the connection and will consequently be liable to act on an unreasoned basis. When they examine moral issues students should be asked to meet the following criteria. Their close correspondence to scientific methodology and postulates is obvious.

*Understanding of the issue
*Identification of problems
*Consistency between claims
*Use of reasoning
*Clarity of expression
*Comprehensiveness of analysis
*Awareness of judgmental presuppositions
*Search for alternative solutions
*Seeking of ways to avoid the problem
*Taking of an unbiased perspective[10]

The coincidence of methodologies is not accidental. It reflects the standard of reason and scientific analysis at the core of the Western approach to the world. Teachers can perform an important service to their students by demonstrating how this approach cuts across disciplinary lines. Since the demonstration is more difficult in the abstract than when undertaken in relation to specific, already meaningful circumstances, it is extremely important to deal with specific moral issues.

Discussion of Moral Issues

The preceding indicates that separation of moral issues from the remainder of the students' concerns will create an artificial distinction between the different aspects of professional life. This implies that while the introduction of moral questions should be carefully planned by the instructor, it ought to arise for the students in a natural context. Two goals can be accomplished in this way: the instructor can be seen by the students as a role model, not merely as a transmitter of information, and the moral issues can be connected to their future professional activities.

It must be emphasized that no strict distinction needs to be drawn between the professional future of the students and their current lives. Many of the moral problems encountered by students are directly analogous to professional issues. The instructor should thus not hesitate to deal with questions which concern academic conduct or student life in general because these form part of the professional preparation of the students.

The following example shows the the process of integration can begin the very first day of class. This day is usually devoted to giving a description of the course and handing out a syllabus. The time can be used simply for explaining the rules and requirements which govern the course. On the other hand, it could be used to demonstrate to the students how through the initial activities a contract is entered into between them and the instructor. Issues regarding the instructor's and the students' rights can be raised. The concepts of accountability and fairness can be discussed, and the students can be given an opportunity to raise complaints or questions. Finally, the analogy between the class and the entrance into a professional contract can be established. This procedure has the potential of not only making the subject more relevant and interesting, but of provoking reflections which might otherwise not occur until after they have made professional commitments.

The important point in relation to the above example is that the first day of class will likely be devoted to introductory matters in any case, but by relating it to the students' professional concerns not only are matters of ethics introduced, but interest is also generated. In the same vein, discussions of cheating, helping other students with homework, or plagiarism can arise in an authoritarian context or in the context of rational deliberation. Based on such discussion a comparison to problems in engineering can then be established.

Another possibility for discussion involves reproduction of copyrighted computer programs. Although the practice appears to be widespread on campuses, even among faculty members, very few have reflected about the issue. In bringing up examples like this instructors have the opportunity to demonstrate to students their own professional standards and explain on what these are based. In a like manner, instructors can introduce discussion of news items, issues from professional journals, or even questions from their own work experience.

Raising ticklish moral questions, especially in relation to oneself, of course to some extent implies opening oneself up to the students. While this can be dangerous, it also brings with it the benefit of lessening the distance between the students and the instructor. Discussion of moral and professional questions can thus accomplish more than clarifying beliefs. It can focus the issues within the context of professional life, and can demonstrate some consequences of professional activity.[11]

It might be objected that most professors simply do not have time to deal with such issues in class. Outside of class, perhaps, but not in a situation which ought to be devoted to strictly specified academic content. But, as I have tried to show, many of the issues related to professional conduct can in fact be related to course specific questions. In addition, I am not advocating that entire class periods at a time need to be devoted to such issues. Classes which for fifty minutes deal solely with subject-matter material are probably not only unusual, but very likely do not fully meet the needs of the students. All educators "waste" some time, but such "waste" is of course not actually a waste, because changes of pace, a few jokes, or a brief bull session all contribute to the total mission of the educator. Some of the "wasted" time could be planned for the purpose of raising moral and professional issues. In any case, it is important to remember that the task of engineering educators goes beyond classroom teaching, that we all share in the responsibility of educating our students to become professionals.

NOTES

1. Cynthia Selfe and Freydoon Arbabi, "Writing to Learn: Engineering Student Journals," Engineering Education, Vol. 74, No. 2, November 1983, pp. 86-90. See Also Michael Panelich, et. al., "EPICS: Professional Projects for Freshmen and Sophomores," Engineering Education, Vol. 74, No. 4, February 1984, pp. 279-283.

2. Accreditation Board for Engineering and Technology, Criteria for Accrediting Programs in Engineering in the United States, ABET, NY, 1981.

3. Rosemary Chalk, et. al., AAAS Professional Ethics Project, American Association for the Advancement of Science, Washington, DC, 1980.

4. Heinz C. Luegenbiehl, "Engineering: Profession and Professionals," Proceedings, Frontiers in Education Conference, Institute of Electrical and Electronics Engineers, NY, 1981, pp. 190-195. See also Jacques Barzun, "The Professions Under Siege," Harper's, October 1978, pp. 61-68.

5. Lisa H. Newton, "The Origin of Professionalism: Sociological Conclusions and Ethical Implications," Business and Professional Ethics Journal, Vol. 1, No. 4, 1982, pp. 33-42.

6. Robert J. Baum, Ethics and Engineering Curricula, Institute of Society, Ethics and the Life Sciences, Hastings-on-Hudson, NY, 1980, p. 26.

7. Albert Flores, "The Philosophical Basis of Engineering Codes of Ethics," in Schaub and Pavlovic, eds., Engineering Professionalism and Ethics, John Wiley and Sons, NY, 1983, pp. 269-276.

8. Karl Pavlovic, "Autonomy and Obligation: Is There an Engineering Ethics?", in Schaub and Pavlovic, eds., Engineering Professionalism and Ethics, John Wiley and Sons, NY, 1983, pp. 223-232.

9. Dan H. Pletta, "Ethical Standards for the Engineering Profession: Where is the Clout?", Professional Engineer, July 1975, pp. 40-42.

10. Heinz Luegenbiehl, On Utilizing the Engineering Codes of Ethics, Illinois Institute of Technology Ethics Module, Chicago, in press.

11. Stephen Unger, Controlling Technology: Ethics and the Responsible Engineer, Holt, Rinehart and Winston, New York, 1982.

THE ROLE OF HIGHER EDUCATION FOR THE TEACHING OF STUDENT VALUES

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Introduction

Responsibility for the development of values by college students is currently an issue of heightened interest and concern throughout American higher education. Most colleges and universities state in their catalogs that the development of student values is part of their educational missions. However, recent discussions in higher education literature reflect a sense of failure in teaching values, disagreement and confusion about the responsibility for values education and doubts about the potential for fulfilling responsiblity for values. This concern is occurring simultaneously with an awareness that the viability, perhaps even the survival of our society depends upon the education of future leaders capable of making wise value judgements. Ernest Boyer, President, The Carnegie Foundation for the Advancement of Teaching, in his introduction to Warren Martin's book, College of Character comments on this concern. He notes the loss of meaning and purpose in our society brought about by technological and social change and freedom from past traditions. He stresses the need for institutions that will concern themselves with the "educated heart" and will promote the "search for authentic forms of community." He comments:

> Today, hard personal and civic choices must be made, and within such a context, colleges and universities have a special obligation to help students develop 'the capacity of judging rightly in matters relating to life and conduct' (the definition of wisdom in Oxford English Dictionary). The responsibility given scholars and teachers is not only to search for truth, but additionally, to shape knowledge to fit the details of life. They are to apply truth to conduct, or translate knowledge into wisdom. (1982, p. x)

The diminished impact, if not failure, in developing student values stems from dramatic changes that have occurred in higher education in the last 50 years. The expansion of large impersonal universities, the demise of in loco parentis as the basis for student-institutional relationships, the impact of collective bargaining in defining faculty responsibilities and the rebellion against authority by students in the sixties are a few of the changes that have altered both the definition and implementation of institutional responsibility for teaching values.

Current interest in values education stems from several disconcerting observations. The first is that technological advancements are increasing the number and complexity of decisions about how technology will be used to enhance the quality of life in our society and perhaps to avoid human catastrophes. The second is based on evidence from longitudinal studies of student attitudes and values that depict students as self-serving, materialistic, pessimistic about society, lacking in national heroes whom they emulate and having little concern for the welfare of others and society. Astin (1984, p. 12) found in his eighteen year study of student values that "...developing a meaningful philosophy of life" was the value showing the greatest decline in student interest. It dropped from being the most popular value fifteen years ago to eighth on the list. Other observers of student attitude trends describe students as feeling powerless to influence their world, fearful of unemployment, self-centered and lacking in loyalty to organizations. Style, not substance, young people conclude is the way to make it in contemporary society as they see it (Wall, 1984). A third concern recognizes the highly pluralistic nature of our society, the free exposure and access of young people to adult behaviors, the complexity of making personal value choices, and the diminished role of family, church and other traditional support systems. Related to these concerns is the growing evidence of what a Carnegie Council report called "...a general decline in integrity of conduct on campus", and "...signs of deterioration of important parts of academic life" (McBee, p. 31). Academic dishonesty, drug and alcohol abuse, vandalism, student loan defaults and sexual abuse are among the most serious problems. A significant increase in serious emotional problems is being reported by university counseling centers across the country. Students seem increasingly to view their affluent, pluralistic, crisis ridden world with pessimism. As Arthur Levine noted in *When Dreams and Heroes Died*, a study of student attitudes since the 1960's, students describe life as, "going first class on the Titanic" (1980).

There is confusion in higher education about its responsibility for and ability to impact student value development. Points of view expressed in articles appearing recently in higher education literature vary from advocacy of vigorous indoctrination to *laissez-faire* (McInnes, 1984; Plante and Myrent, 1984; Bell and Eddy, 1980). The confusion stems from differing definitions of values, variance in institutional goals, characteristics and perspectives, doubts about values as pedagogy and disagreement in principle with the role of higher education in teaching values. Since the demise of *in loco parentis*, few colleges and universities have found well-conceived, intentional approaches to the teaching of values. For example, a recent survey of chief student affairs administrators found that although they place great importance on values development, few reported having programs specifically intended to influence student values (Dalton et. al. 1981).

There is some evidence that suggests that without efforts specifically designed to impact student value development, the college experience has an adverse effect on student values. One seven-year study that observed value changes beyond graduation found that, "...altruism and political interest declined most while business-related goals increased in importance", that there is "...little indication that humanities programs instill greater social responsibility in their graduates", that "...participation in community service activities" ranked at the bottom of leisure time activities, and that there was a decline in interest in religion (Solomon and Ochsner, 1978). Another study of 2,000 students in their freshman through senior years at 50 colleges and universities concluded that, "...the social and political attitudes of college students change surprisingly little during their college years" (Fields, 1984).

The intent of this paper is to consider the role of colleges and universities in teaching values and to offer some perspectives on how values education can prepare students for effective personal and civic life in their society. The basic thesis is, 1) that our society more than ever needs an educated citizenry that cares about society's welfare and is capable of making sound decisions about social issues; 2) that young people feel pessimistic about their world and powerless to change it, exhibit behaviors that are personally and socially destructive and show limited interest in and ability to address social issues; 3) that higher education has relinquished its role in teaching values and, 4) that higher education has a responsibility to society in this area; and 5) that colleges and universities should address this problem in a more deliberate and effective way.

Definition of Values

For purposes of this discussion, values are defined as those principles by which we make decisions about what is good for ourselves and for others. It's important to keep in mind the distinction between value substance and valuing skill i.e. the difference between one's beliefs, moral principles and character and one's ability to make value decisions. Having a well-developed value system that guides one's life must include knowledge about values, a desire to follow them and skill in applying them. Effective values education must help students develop in all three of these dimensions.

Perspectives on the Responsibility of Higher Education for Teaching Values

The origins of higher education in the United States had a strong religious base. In many of the earliest colleges, character development and spiritual growth were equal in importance to the academic curriculum. Although parochial interests of each college's supporting religious organization were primary, responsiblity to prepare citizens for society was acknowledged as well. Along with the family and church, higher education always has been regarded as a primary transmitter of social values. Values now receive only peripheral attention in most institutions. The decline in religion in society and the resulting relativism and pluralism are contributing factors. As Frederick Borsch, Dean of the Chapel at Princeton University, states: "There is no longer an easy homogeneity or strong *senses communis* from which a common stock of agreed-upon values can be drawn" (1984). Other factors include the growth in size and impersonalization of universities, reluctance of faculty who in the sixties were assailed by students for "establishment" values, the growth in student consumerism, increasingly crowded curricula that attempt to keep up with knowledge expansion and allow little room for discussion of values, students' preoccupation with their careers and faculty focus on professionalism and neglect of teaching (Edgerton, 1984). These trends and others have seriously diminished efforts especially in large universities to address values education. As Borsch observes: "The price that has been paid for the high degree of individual choice and curricular freedom in academe is that a university can no longer try to set forward ideas and concerns with which it believes everyone should deal" (1984). As noted earlier, this values neutrality of universities comes at a time when society is in its most desperate need for informed citizens who are capable of moral/ethical decision-making.

The varied responses to these trends which have been expressed in the literature give some indication of current confusion. Some leaders in higher education are calling for decisive action to counter this trend and are suggesting that institutions take specific measures as one college president stated to "...create occasions and formats where shared values can be articulated, celebrated, and extended", and initiate a "national dialogue on the common values of the higher education community in the United States" (McInnes, 1984). In contrast, others insist that the liberal arts curriculum fully addresses values education and that no special institutional efforts are necessary (Plante and Myrant, 1984).

Some students also reject the notion of values education. A student leader at Penn State University for example maintains that, "...institutions of higher learning should concern themselves with transmitting knowledge, not values...", that although faculty have a superior grasp on knowledge in academic disciplines they should not be extended the same recognized authority in helping students "...struggle with the greater issues of life...", and that there are other social mechanisms that are more appropriately able to convey values to students than is higher education (McBee, et. al 1980).

There are faculty who fear the prospect that an emphasis on values will lead to the promulgation of a common set of values for all (Plante and Myrant, 1984) - an unlikely prospect in my view. Still others warn of the threat of specialized education, that will place the fate of humanity in the hands of highly but narrowly educated technicians (Thimmesh, 1984).

Approaches to the Teaching of Values

Although values development of students is an expressed priority in most college statements of educational mission, very few direct program interventions designed to "teach values" to students have been attempted. Programs at the University of California, Irvine, the University of Minnesota and Alverno College are notable exceptions (NASPA, p. 23). Dalton, et. al. (1982) point out that those institutions that have addressed values education, both formally and informally, typically have used one or more of the following approaches:

Values Transmission - This approach commonly is practiced by institutions with specific doctrinal or moral foundations. Specific values deemed important for individual, institutional and societal welfare are promulgated and students are expected to maintain strict adherence to them.

Values Clarification - Developed within the past 15-20 years, this approach attempts to help students gain increased rational and emotional awareness of value choices and of their own values. No specific values are promoted; emphasis is placed on self-awareness and self-determination in one's values development.

Moral Development - Based on the work of Lawrence Kohlberg and others, this highly rational approach encourages students to increase their levels of moral reasoning through analysis of moral/ethical problems. Although values classification is sought, the approach is based on a theoretical model of ascending stages of sophistication of moral reasoning. This approach has been positively received in the academic community.

Moral Action - This approach emphasizes process rather than content. It's based on the premise that values are learned through experience. Values held from rational and emotional origins and influenced by both external and internal stimuli are not internalized until confirmed by experience.

Some argue that colleges and universities can have little effect on student values because the values, attitudes and behavior patterns of students are fixed before they arrive at college and because the heterogeneity of student backgrounds prevents agreement about which values are to be taught. However, research by Astin, Chickering and others on student development during the college years reveals that colleges can significantly influence student values. For the traditional 18-21 year old student, college occurs during formative years of personal development that can be influenced positively by institutional interventions. Even in the most complex university such universal values as honesty, integrity and respect for the rights and welfare of others currently receive so little attention that much more can be accomplished. At no other time in one's life are so many resources available to assist with the search for personal meaning and the development of values than during the college years. It is an abdication of social responsibility for colleges and universities not to capture this opportunity to enhance the lives of students.

Fulfilling Institutional Responsibility for Teaching Values

The problems facing our society that must be addressed with good judgement, the disconcerting trends in the values, attitudes, and behaviors of American youth, and the diminished role of colleges and universities in shaping the personal lives of students leads one to the conclusion that a renewed clarification of roles and commitment of effort toward the teaching of values to students is urgently needed throughout higher education in the United States. The basic challenge for every institution is to determine which values will be taught and how they will be taught.

Despite limited success in teaching values in recent decades, every college and university should set personal integrity and respect for others as minimum educational objectives for students. It is helpful also to distinguish between individual values i.e. those that mainly affect one's personal welfare, and social values i.e. those that relate to the welfare of others and to society as a whole. Although the distinction is often blurred, institutions must approach the teaching of individual values somewhat differently than social values especially with regard to the degree of prescription by which they are promulgated and enforced as institutional expectations. Safeguards of the freedom to develop and hold one's own personal values and beliefs must be balanced by firm limits on student behavior which affects others.

The dynamics of teaching and learning values is complex and therefore a comprehensive approach is required. Each of the theoretical approaches cited above contribute to a unified intentional program. The values to be transmitted must be identified and communicated (values transmission), clarification of values relative to their personal significance must occur (values clarification), a theoretical progression of learning stages should guide program delivery (moral development), learning should be in active modes involving both rational and experiential activities (moral action), and role models and mentors must be visible and available. In other words, values are learned through the combined impact of knowledge, experience, example, behavior control, mentorship and campus environment.

Morrill (in Edgerton, 1984) stress the importance of intentionality and the combination of cognitive and experiential processes.

> Teaching values shares the same kind of concern for discipline and rigor as any solid academic enterprise. Yet it also newly acknowledges a crucial dimension of experience. The dominant academic methods operate as if knowledge involves only the disembodied mind. What I'm saying is that there is a knowing which doesn't separate knowledge and feeling, in which a person puts the two together and takes a stance by a reliance on values.

Chickering's (1980) research on student development suggests that a student's values are influenced by: the clarity of institutional goals and internal consistency; institutional size; curriculum, teaching and evaluation; residence hall arrangements, faculty and administration; friends, groups, and student culture. Institutional mission and size obviously are major factors that determine approaches to values education. A large public university stands in sharp contrast to the small private sectarian college such as Alverno College for Women which integrates values education into the total educational program. Therefore, the fundamental principle in fulfilling institutional responsibility for teaching values is that each college or university must make an institutional commitment to values education in a manner that fits its educational mission. Equally important is the clarity and forthrightness of the institution's expression of its mission and its understanding and acceptance by students. Such forthrightness helps students choose their institutions thoughtfully and increases their receptivity to institutional values. The generalities found in most college catalogues do not suffice.

Institutional commitment requires a planned approach that enlists the support of faculty, staff and students, considers student life outside the classroom as part of the total educational program and links it to the formal curriculum. As Morrill (1984) suggests: "You structure the whole experience to connect. This translates finally into strategic planning in which you are constantly trying to see how your institution's distinctive identity is being related to everyone involved in the enterprise."

A central focus of values education must be the formal academic curriculum, especially the liberal arts curriculum. Specific courses in the processes of moral reasoning, social analysis and value clarification such as those offered at Harvard University or those suggested by Astin (1984) dealing with "the purposes of education", "the quality of life and technology" and "material versus spiritual values" are necessary. Even more important is the examination in every course of the values implications of the subjects being taught. Issues must be raised by the faculty, and students must be guided in the clarification of values toward personal, independent choice and decision - making. The academic climate and culture of the campus should encourage discussion and debate outside the classroom among the members of the academic community.

The relationship of faculty and staff with students is paramount to values education. The potential for faculty impact on the personal lives and values of students is well documented (Wood and Wilson, 1978). It is important to expect faculty to be clear and firm about their own values, to be willing to confront students with values issues, to tolerate and encourage student dissent, and to help create an institutional ethos that fosters values development. Faculty must go beyond helping students clarify values. They must promote thoughtful consideration of specific values that are vital to individual and social welfare.

Institutions must also reflect in their administrative conduct sound values worthy of student emulation. If students observe administrative/bureaucratic processes that contradict the stated values of their institutions, they hardly can be expected to accept and internalize sound values in their own lives. The complexity and bureaucratic tendencies of universities, their political/ social dynamics, and their sensitivity to constituencies with diverse interests make their administrative behavior vulnerable to misperception and negative reactions by students. A special effort must be made to maintain a high level of communication with students and to keep them informed of the rationale for administrative actions especially the most important and highly visible ones. As Borsch (1984) states, "... the context in which ideas are taught and the way they are taught have at least as much effect on students as the ideas themselves. That is why such factors as a university's residence life, hiring practices, investment practice, governance, admissions policies, curriculum structure, and overall social setting cannot be left out of reckoning when one is appraising the results of a university education". Personal contact between administrators and students is vitally important because only through face-to-face interaction can students gain a sense of an administrator's values and character as they are expressed in administrative actions.

The out-of-classroom experiences of students have the greatest influence on student values and character development of all dimensions of university life. Values are not fully learned, until they are expressed through personal behavior and tested by experience. College life offers students the fullest range of personal development experiences and learning opportunities that will be available to them during any period of time in their lives. Yet most colleges and universities leave the impact of student life largely to chance. The opportunities for values education can be enhanced greatly if the extracurriculum is designed and made available with the same degree of care and creativity as the formal curriculum. Admittedly, this is easier logistically and conceptually at small colleges than at large universities. However, universities can accomplish similar objectives through organized subcommunities within the larger institution. The residence life program at the University of California, Irvine is a case in point. Whiteley's recent research on the impact of extracurricular collegiate life on the ethical and moral development of students at Irvine found that, "... extra curricular experiences and particularly the living environment provided by college life are perceived by students as influential in changing their reasoning about moral issues" (in Edgerton, 1984).

Summary

The importance of educating young people to preserve a moral society is self-evident. Yet higher education's role in teaching values is poorly defined and articulated, and ineffectively executed. Responsibility for values is a complex issue and approaches that have general support in an academic community are difficult to achieve. The obvious point is that, as with all important but challenging endeavors, one's best effort is required.

Warren Bryan Martin, author of College of Character, suggests that universities and colleges are "places best suited for what can be called the synoptic function..." i.e. places for "...cross-fertilization of ideas...", places which "...yield answers to the questions of meaning and ends, of significance and effects" (1982, p. 32). To address social and moral issues and to enhance the values development of students, he purposes a collective effort of students, faculty, staff, alumni, trustees and leaders from the community (1983, p. 42). It's this kind of commitment of resources and resolve to make a difference in the lives of students that is called for in higher education today.

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FACULTY DEVELOPMENT: MORE PERSPECTIVES

FRIDAY, 5 JULY

1400 - 1530

FACULTY DEVELOPMENT SEMINARS: AN ANALYSIS OF APPROPRIATE TOPIC SELECTION AND FORMAT

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Introduction

During the period 1978 to 1984 the author has presented twenty-one seminars on "Effective Teaching Techniques." This paper describes the participating groups and the seminar objectives, topics, and format. An analysis of pre-seminar preferences, mid-seminar feedback, and post-seminar evaluations from more than three hundred university faculty members reveals a consistent preference for certain topics and presentation formats.

Participating Groups

The seminar was presented nine times to groups of faculty from the Pennsylvania State University. A total of one hundred and fifty-seven faculty members participated, in some cases as mixed groups of full and part-time teachers from more than twenty different disciplines and in other cases as homogeneous departmental groups. The seminar was also presented six times to groups of nursing instructors. A total of one hundred and seventy-six nursing instructors from sixteen different institutions participated, in some cases as the complete department from one institution and in other cases as a mixed group from several institutions.

In addition, the seminar was presented five times as a public program for general audiences. One hundred and fifteen persons, most of whom were responsible for training programs in private businesses or governmental agencies, paid to attend these seminars.

The average group size was twenty-nine. The largest group was thirty-two, and the smallest group was eleven. Less than five percent of the four hundred and forty-eight participants indicated that they had ever had any formal course in teaching techniques.

Seminar Objectives

Prior to or at the start of each seminar the participants were given the following list of objectives:

By the end of this program, you should be able to:

1. Define effective instruction.
2. Describe five differences between child and adult learners and the implications of these differences for classroom instruction.
3. Describe and explain an instructional model which includes cycles of objectives, instruction, and assessment.
4. Name ten important techniques which can be used for effective instruction.
5. Name five techniques which effective instructors should avoid.
6. Describe the importance of learner participation and feedback in the learning process.
7. Describe three different types of questioning techniques and how proper use of "wait time" can enhance these techniques.
8. Describe the components of properly stated instructional objectives and the advantages and problems associated with the use of these objectives.

The meaning of each objective was clarified, and the participants were told that time would not permit discussion of all objectives. The participants were then asked to rank the objectives for inclusion in the program from most important to least important. The ranking was done in writing and anonymously.

Time Format and Selection Process

The programs for Penn State faculty members were all half-day seminars. The mixed group seminars were held on Saturday morning, and attendance was voluntary. The department seminars were held on weekdays, and attendance was required. The programs for nursing instructors included two one-day seminars, two half-day seminars, and two seminars held as a series of one hour meetings, once a week for six weeks. One of these was via a conference telephone arrangement. The seminars for individual institutions had required attendance; the others had optional attendance. The public seminars were all one day programs. Attendance was by pre-paid registration.

Topics

The seminar content was selected from among the following topics:

1. A definition of effective instruction
2. An instructional model involving cycles of objectives, teaching techniques, and evaluation
3. The differences between adult and child learners and the implications for teaching college students and older adults
4. The importance of the physical arrangement of the classroom
5. Learning styles and their implications for teaching styles
6. The use of visual aids
7. Instructor attitude
8. Eye contact, ear contact, mind contact
9. The use of feedback and learner participation
10. Questioning techniques and question types
11. The use of "wait time"

12. Bloom's taxonomy of educational objectives
13. Teaching techniques which should be avoided
14. Writing and using instructional objectives
15. Qualities of effective teaching

Presentation mode

Information was presented verbally and visually using overhead transparencies. Participants received a notebook of printed materials which included copies of all transparencies. There was regular, interactive discussion about each topic.

The objectives covered and the topics selected were decided upon by the group at the beginning of the seminar.

In almost all cases the presentation mode was used to model the teaching approach under discussion. For example:

1. Objectives were given to the participants and discussed with them.
2. The participants' ranking of the objectives was used to order the sequence of the seminar and to initiate a discussion of the differences between child and adult learners.
3. The transparencies dealing with content areas were used to initiate a discussion about visual aids and learning styles.
4. Just before the first "break," feedback was collected using a standardized form. The feedback was summarized and used to illustrate a discussion about the uses of feedback.
5. The questioning techniques previously used in the discussion of learning styles and feedback were re-examined and used to discuss question types, their functions, wait time, and Bloom's taxonomy.

Results

1. Participants pre-seminar preferences:

   In the ranking of the objectives for inclusion in the workshop, there were some remarkable consistencies. Regardless of the group, the objective, "Name ten important techniques which can be used for effective instruction" was ranked first or most important for inclusion by every group. The objectives covering techniques to avoid and the importance of learner participation and feedback were ranked either second or third over eighty percent of the time. The objectives concerned with the components and use of instructional objectives and the differences between adult and child learners were ranked lowest (seventh and eighth) over seventy percent of the time.

2. Mid-seminar feedback:

   The reaction sheet reproduced on the next page was used to collect feedback about ninety minutes after the workshop began.

Date ______________

MEETING REACTION SHEET

How Included Do I Feel?

Completely out of it	Can't decide yet	Completely with it

0 1 2 3 4 5 6 7 8 9 10

How probable is it that my own learning goals will be met?

Highly improbable	Can't decide yet	Highly probable

0 1 2 3 4 5 6 7 8 9 10

List two adjectives that describe your feelings right now.

Comments:

This feedback was also very consistent. On the scale marked "How Included Do I Feel?" at least eighty-five percent of all responses were between 7 and 10. On the scale marked "How probable is it that my own learning goals will be met?" at least seventy percent of all responses were between 7 and 10. The adjectives recorded were over ninety percent positive, with the most common adjectives being "interesting," "comfortable," and "informative."

3. Post seminar evaluation:

At the close of the seminar each participant filled out an anonymous evaluation form reproduced below: (The responses shown are the percentages for all seminars and the most common responses to open-ended questions.)

SEMINAR EVALUATION QUESTIONNAIRE

Purpose

The purpose of this questionnaire is to obtain your honest opinion of the Penn State Program you have just completed. The evaluation will be summarized and available to you upon request.

	QUESTIONS	%	RESPONSES
1.	In a general way, how helpful do you think the seminar was to you?	74.6	Very helpful
		23.8	Helped some
		1.6	Complete waste of time
2.	Did you find the seminar interesting?	90.4	Almost always
		9.6	Some of the time
		0	Not very interesting
3.	Did the workshop give you a better understanding of your organization's problems?	42.3	Much better
		45.8	Somewhat better
		11.9	No better
4.	On the job, are you able to put into use the things discussed in the seminar?	69.4	Almost always
		29.0	Some of the time
		1.6	Very little
5.	Did the seminar cover the subject areas you anticipated?	79.0	Yes
		21.0	Partly
		0	No
6.	Do you feel that the seminar was about practical subjects?	93.4	Almost always
		6.6	Some of the time
		0	Very seldom
7.	Did the instructor offer clear explanations on the points he/she expressed?	95.2	Almost always
		4.8	Some of the time
		0	Very seldom
8.	Did you feel free to participate, or offer remarks?	90.5	Entirely
		7.9	Felt somewhat backward about it
		1.6	Never felt free

9. Would you recommend a similar course for others?
98.6 Yes
1.4 No

10. Have the most profitable and related topics been covered? Explain.
The responses were over ninety percent positive with most comments related to practical use of the techniques in the classroom.

11. Please state the aspects of the program that you liked the most.
The most common responses cited the modeling of the techniques, the chance to discuss teaching with other instructors, the use of specific examples, and the ability to appy what was learned.

12. Please state the aspects of the program that you liked the least.
The most common response was "too short." Others cited the lack of material for their specific discipline.

13. What type of follow-up program would you like?
The topics most commonly asked for were more on test design, more on teaching techniques, and a second session to discuss what happened after the seminar ideas were tried out in class.

Conclusions

The seminars were not designed as a research study. However, a post-hoc analysis was possible. Because of the large number of participants and the similarity of their responses, the following conclusions seem to be reasonable:

1. Less than five percent of the university faculty and the business and industry participants had had formal training in how to teach. Yet all were facing classrooms of students, and most were interested in a teaching techniques seminar.
2. There was very little difference in the types of responses regardless of the type of group or regardless of whether attendance was voluntary or required. Those who are teaching are very receptive to ideas and practices for which they see direct classroom applications.

3. This kind of audience is receptive to learning theory when it is used to support practical teaching techniques. However, learning theory presented along or before the discussion of specific teaching techniques may be rejected.
4. Modeling of teaching techniques as part of the teaching process is a powerful tool which helps to gain acceptance of the material presented.
5. There is a need for an ongoing mechanism which will enable college and university faculty to discuss the teaching art and effective techniques for improving instruction. Seminars of the type described above are just such a mechanism which can be utilized regardless of the discipline involved.

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A SELF-MANAGED SYSTEM FOR STAFF DEVELOPMENT

Bryan L. Button and Derek Kalyanvale
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The Mechanical Engineering Department was founded twenty-four years ago. Over the past six years the number of permanent staff has been almost constant at twenty-five academic members of staff, fifteen technicians and one experimental officer. During this time one member of staff resigned to return to industry, another retired and there have been two replacements. By contrast, because the research in the Department has expanded, the number of temporary staff that have been supported by external research funds has increased from two research assistants to five research assistants or fellows and three technicians.

The Department did offer a two-year Higher National Certificate by part-time study and a three-year Sandwich Higher National Diploma and a four-year Sandwich BSc Degree and Honours Degree by full-time study. The changes in Engineering Education have brought about a two-year Higher National Diploma by full-time study and the enhancement of the BSc to a BEng. Every year there has been about three hundred students in the department. Throughout MPhil or PhD Degrees have been awarded for part-time or full-time research.

It has been traditional for members of staff to be timetabled for: lectures, tutorials, seminars, laboratories, supervision of final year student projects and postgraduate research and course tutorships. Also, it has been traditional for time allowances to be awarded by the Head of Department for: part-time research, administration and when the opportunity has arisen part-time or full-time secondment. While no member of staff has finished with the same profile of activities, every effort has been made to allocate the same number of hours to everyone; on average this has been about five hundred hours per annum. This has not included the time for personal tutorials to about ten students and to invigilate at about four end-of-year examinations.

The allowances for part-time research have been recommended by the Reader. Where it has been possible, the member of staff with such an allowance has been given a day or two half-days clear so that the allowance could be used effectively. There has been a tendency for some members of staff to view the allowance as an extra commitment, and so give it a low priority relative to other activities. In part this has been brought about because the allowances have been awarded last and after the timetabling and other allowances have been awarded.

The allowances for administration still include those for: student admissions, placing students in industry for work experience, timetabling and subject leaderships.

It has been Polytechnic policy to encourage members of staff to undertake consultancy, but as an extra activity in their own time, unless the consultancy has included money to pay for replacement teaching. Also, it has been Polytechnic policy to financially support some members of staff to attend appropriate conferences and courses.

In the time left over outside the old system other equally important activities have been carried out, but they did not receive any formal recognition. Traditionally they included the preparation of lecture notes, tutorial sheets and laboratory equipment. However, everybody recognised there was a need to introduce new technologies into our courses, eg Computer Aided Design, Computer Assisted Learning and microprocessor applications. In addition the conversion of our BSc course to a BEng course had to be planned.

In December 1980 a Departmental meeting took place. The purpose of the meeting was to discuss if the system of timetabling and the award of allowances could be improved to satisfy the future needs of the Department. At this meeting it was proposed that this could be achieved by awarding allowances to other activities under the heading of teaching developments. Some members of staff were of the view that teaching developments would continue regardless of any formal recognition. Others thought that the formal recognition would not adversely affect those already active, but could act as catalyst for those with little or no commitment. On balance the proposal was accepted.

At the meeting it was decided that a committee should be set up to recommend to the Head of Department what allowances should be made for teaching developments and part-time research. The committee that was chosen consisted of the Reader as Chairman, and three members of staff who represented as far as possible the range of disciplines and activities within the Department.

Three more decisions were reached at the meeting. The first was that the allowances should be awarded before timetabling started for any one academic year. The second was that the system should be launched in October 1981. The third was that those members of staff supervising a research assistant or fellow employed on external research grants should be given the same allowance of eighty hours as those supervising a full-time postgraduate student. (To avoid increasing the total number of hours allocated to all members of staff every research assistant or fellow has been was required to assist with teaching for eighty hours).

THE SYSTEM

Initially all members of staff were invited to submit proposals for any project which they considered worth an allowance. They were asked to prepare in their proposals under the following headings: title, aims, background, programme of work, benefits to the Department, anticipated achievements; resources necessary, and time allowance requested. Since then the only addition to this procedure has been to include a report on any allowance awarded in the previous year.

The committee was given no mandate regarding which projects should or should not be supported, or the amount of the allowances that should be awarded. At its first meeting, the eligible project categories and the guidelines for the award of allowances were formulated. These were influenced by the proposals themselves, and by anticipating how the system would operate in future. The allowances for research and teaching developments were not fixed but were based on the proposals submitted. Prior to 1981 the allowances for part-time research were fixed at a total of eight hundred hours per year.

The committee decided that: its discussions would be secret; no members would discuss any proposal with any applicant and only the Chairman would discuss where necessary any unusual outcome with an applicant.

The committee adopted the procedure where every proposal was allocated to two of its members, who independently argued the case for the proposals allotted to them. When a proposal needed clarification the questions were sent back anonymously to the member of staff via the Chairman.

After three years the committee has expanded to five. To involve other members of staff, in future years one member will retire each year and he will be replaced by another. With time the guidelines for the Department have been refined, and the categories for which allowances will be granted have been modified. For 1983-84 the guidelines and the acceptable categories are given below with minor modifications.

Guidelines for the award of allowances for research and teaching developments

1 A member of staff will be awarded an allowance to pursue research for a higher degree.

2 For members of staff with the standing and/or a higher degree they should wherever possible conduct research through the supervision of others.

3 Research should be self-supporting wherever possible; to help achieve this allowances can be awarded so that grant applications can be prepared for submission to external bodies for support.

4 Allowances can be awarded to encourage and enable members of staff to introduce new technologies into our teaching.

5 It is expected that every recipient of an allowance will publish the results of his work when it is appropriate, without any additional allowances.

6 It is expected that every recipient of an allowance will give at least one seminar on his work.

7 The committee decides what is best for the well-being of the Department as a whole.

8 Normally only one allowance will be awarded to any member of staff.

9 Other allowances may be made by the Reader for any recipient of a research grant.

10 Every award must be approved by the Head of Department.

Acceptable categories for allowances

A Research with a higher degree registration.

B Research without a higher degree registration.

C Introduction of a new technology into our teaching.

D Preparation of national or international publications on work which had been carried out without an allowance.

The appendix is an example of the research and teaching development allowances. This shows the projects, their categories, when they started and the allowances that were requested and awarded. The allowances totalled 1180 hours, which accounted for 9.5 percent of the total time allocated to the members of staff. For comparison the breakdown of the other activities were: lectures - 2000 hours (16 %); tutorials, seminars and laboratories - 5650 hours(45 %); supervision of final year projects - 750 hours (6 %); supervision of postgraduate students - 1100 hours (9 %); administration - 1300 hours (10.5 %) and secondment - 500 hours (4 %).

Since 1982 seminars have been held at approximately weekly intervals for at least two terms each year. Each year, every recipient of an allowance has given a seminar. The attendance has varied between three and forty-five with an average of fourteen. The smaller figures are probably the result of a combination of a minority interest in a subject, and the real difficulty of finding a popular half-hour slot during the day. The majority of those attending the seminars were members of staff, research assistants or fellows and research students from the Department. It was hoped that undergraduates would attend, but very few did.

DISCUSSION

To provide an overview for discussion the allowances are given in hours on a yearly basis in the four categories in the table that follows. To complete the overview a secondment category has been included where 250 and 500 hours represent part-time and full-time secondment respectively.

The numbers in the parentheses refer to the number of members of staff who have received an allowance or were on secondment or the sum of these for the totals.

Category	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84
A	360 (4)	450 (5)	470 (5)	500 (4)	550 (4)	360 (4)*
B	440 (6)	350 (5)	350 (5)	400 (5)*	280 (4)	260 (5)*
C	-	-	-	200 (3)*	380 (6)*	560 (6)
D	-	-	-	-	40 (1)*	-
Secondment	500 (1)	250 (1)	250 (1)	250 (1)	250 (1)	500 (1)
Total	1300 (11)	1050 (11)	1070 (11)	1350 (13)*	1500 (16)*	1680 (16)*

* Using guideline B one member of staff was awarded an allowance in two categories.

In category A the figures for 1982-84 do not include the allowances awarded under guideline B to two members of staff. When these are taken into account the 550 hours for 1982-83 becomes 590 hours and for 1983-84 320 hours becomes 480 hours. This was done so every member of staff finished with the same allowance in this category.

Category A has continued under the new system to be a successful and traditional way of achieving staff development. During the six-year period three PhDs and one MPhil have been awarded to members of staff and there have been three new registrations. Under the new system the total allowance awarded to each member of staff in this category has been larger than under the old system. This has enabled the allowances to be used more effectively. It is anticipated that this will reduce the total time commitment by a member of staff and enable him to complete the research in a shorter period of time.

In category B over the six-year period nine members of staff have received allowances; two continuously. Over the past decade five of the nine members of staff have been awarded their doctorates with allowances under category A. All five are now supervising the research of others and have either applied or are applying for research grants; of the four submitted three have been successful. Probably three of these grant applications would not have been made without the introduction of guidelines 3. On the other hand, two members of staff discontinued their projects because of this guideline but then they started others in category C because of guideline 4. One other project was discontinued because the member of staff resigned to go industry. Another project was started by a new member of staff joining us from industry.

The introduction of category C into the system of allowances has generally increased the progress of the projects; mainly because additional time has been made available through allowances. Over the three-year period the number of projects has increased from three to six. The appendix shows the projects satisfy guideline 4. It is probable that the joint venture on Computer Aided Design is a product of this system. The three microprocessor projects have enabled two members of staff to become familiar with microprocessors in preparation for teaching their applications to students in mechanical engineering. For the other microprocessor project the member of staff concerned has built a controller for his colleague doing project 2ARO. The project for video recording may not have materialised if it had not been for the new system of allowances.

Category D has only been used once and has enabled two articles to be prepared for publication. Guideline 5 was included to encourage publication arising from work in the other three categories.

Next year, allowances for part-time or full-time secondment may be included as an additional category.

BENEFITS

Under the new system more members of staff are engaged in activities which receive recognition by way of an allowance for the work that they do. Teaching developments are on a par with research. Any member of staff can influence what the Department does by proposing a project for consideration by a committee of peers. Every member of staff who receives an allowance must account for it by giving a written report on the work, and a seminar to disseminate its findings. The system forces members of staff to think about what project they are going to during the next academic year. Its implementation enables about ten percent of the Departmental effort to be set aside for staff development.

ACKNOWLEDGEMENT

Without the support and encouragement of Mr. John D. Wallis, Head of the Department of Mechanical Engineering, this self-managed system for staff development could not have been brought about.

APPENDIX

Research and teaching allowances for 1983-84

	Allowance requested /hour	Allowance awarded /hour	Project title
1A77*	open	80+	Hydrocarbon production in a divided chamber stratified charge internal combustion engine.
2A80	160	120	Cyclic creep/fatigue interaction of stainless steel T316.
3A82	140	40+	Variable valve timing for an internal combustion engine.
4A82	150	120	Film cooling performance in the vicinity of jets entering from a duct into a cross-flow.
5B74	60	40	Multijet impingement heat transfer.
6B79	60-80	80	Behaviour of the dc arc in steam.
7B80	80	50	Alternative fuel for internal combustion engines.
8B82	60	50	Computer methods for predicting fluid flow and heat transfer.
9B82	none	40	Self-pressurising hybrid journal bearings.
10C81	300	240	Computer Aided Design (joint by two members of staff).
11C81	80	90	Microprocessors in Mechanical Engineering courses.
12C81	80	110	Application of microprocessors to vibration measurements.
13C82	80	40	Computer Assisted Learning for Thermodynamics.
14C82	40	40	Development of microprocessor applications and teaching.
15C83	80	40	Video recordings of interviews with eminent people for a new diploma.

* Project number, category and year the project first received an allowance.

+ When the allowances under guideline 9 are added the recipients receive a total allowance of 120 hours.

IMPROVING UNDERGRADUATE TEACHING THROUGH FACULTY DEVELOPMENT

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Faculty development, never strongly supported within higher education in the United States, has been vigorously pursued for the past decade. Related to the growth of evaluating teaching and to student dissatisfactions of the sixties, faculty development has been the positive side of efforts to improve undergraduate teaching. Traditionally, United States colleges and universities have offered sabbatical leaves as a major form of faculty support, though sabbatical leaves have not been as widely established or as generously supported as is commonly assumed. A survey made in 1970 (Eble, 1972) found that only about 60 percent of four-year institutions had sabbatical plans and that even fewer provided full funding for the year. Sabbaticals, like other forms of faculty development support, are chiefly aimed at furthering faculty research. A notable fact about faculty development in the recent past is that much of the activity is aimed at improving teaching.

Private foundations, which have long had an interest in supporting higher education, have supported a number of major programs aimed at improving faculty members' competence as teachers. This paper describes a major effort by the Bush Foundation of St. Paul, Minnesota, to improve undergraduate learning by supporting faculty development in almost all of the four-year private and public colleges and universities in a three-state area--Minnesota and North and South Dakota--of the United States. The first three-year grants were awarded in 1980, and most of the institutions receiving initial grants have received terminal grants for an additional three years. The 45 individual colleges and universities embrace a total faculty of over 9,000 and serve more than 250,000 full-time students.

From 1982 to 1984, Wilbert McKeachie, research scientist, Center for Research on Learning and Teaching, University of Michigan, and Kenneth E. Eble, University of Utah, were responsible for carrying out the overall evaluation of the Bush Foundation program. Dorothy Cameron was employed as a research assistant during the first year. A detailed description of the program and the authors' findings are published in a book, Improving Undergraduate Education through Faculty Development (San Francisco: Jossey-Bass, 1985). The success of individual programs supports the general claim that faculty development efforts can improve undergraduate teaching in a variety of ways.

In launching its faculty development effort, the Bush Foundation emphasized local needs and local design. Applicant institutions were asked to describe their current faculty development efforts as well as to propose further efforts that might receive foundation support. These might include sabbatical leaves, travel and research grants, loans, faculty exchange programs, tuition support for further study, and other career development practices. In addition, activities were favored which would not only have an impact on individual faculty members but also on the collective faculty and the instructional program. Other strong Foundation expectations were that the institution would give administrative support and contribute financially to the faculty development activities and would plan to support these activities with institutional funds after the grants expired.

The institutions participating in the Bush Foundation program are a cross-section of higher education in the United States. They include small private denominational colleges with fewer than 1,000 students as well as the University of Minnesota, a major research university and the largest university on a single campus (64,000 students) in the United States. Three-year grants ranged from $75,000 to the smallest of the colleges to $900,000 to the University of Minnesota. A grant of almost $1 million was made to the Minnesota State University System which is comprised of seven separate universities.

Most of the campus programs supported a variety of individual and group activities. Virtually all the programs offered faculty opportunities for grants or released time to support activities aimed at their own professional growth or specific instructional development. Twelve of the institutional programs placed an emphasis on instructional development, and twelve chose to emphasize curriculum change. Eight placed major emphasis on individual faculty professional development. All but a few of the institutions offered opportunities for various forms of faculty development which might affect both individual faculty and the instructional program.

In evaluating the total program, the evaluators made site visits to all the participating institutions, analyzed evaluation reports and other data from individual institutions and the Bush Foundation staff, and obtained data from a random sample of faculty members at each participating institution through a written questionnaire and telephone follow-up. An unusually high rate of return--ninety percent of faculty members not on leave or off campus--was obtained for the questionnaire.

A surprising finding from the questionnaire data was that ninety percent of 372 respondents reported that they were moderately or well satisfied with their roles as faculty members. This response coming from a cross-section of faculty probably characteristic of the faculty at large in the United States challenges the common assumption that retrenchment of the seventies created a serious lowering of faculty morale. Though the presence of a faculty development program may account in part for these contrary findings, they may also reflect previous surveys (Caplan, et. al., 1960) which place professors near the top as compared with other occupational groups in job satisfaction.

Among the explicit concerns expressed by faculty, "having too much to do" was identified by two-thirds of the respondents, and "conflicts between teaching, scholarship, and service responsibilities" by fifty-four percent. Just over half expressed concern about salaries. On the other hand, almost all (306 out of 317 "moderately" or "well-satisfied" faculty members) indicated that a "sense of accomplishment and competence" contributed considerably or a great deal to their satisfaction. In addition, a majority of faculty found a "sense of independence and autonomy" and "opportunity for continued learning" contributing strongly to job satisfaction.

These generally optimistic responses to the questionnaire were confirmed by site-visit interviews with many faculty. Despite modest salaries and demanding work loads at many of these institutions, faculty members expressed satisfactions with what they were doing and how they were able to go about doing it. One persistent note of regret was over the lack of collegiality on most campuses. Many faculty members hoped that faculty development activities would help bring faculty members together again, implying that there was a time when the campus climate had been more collegial. Such conditions may have existed in institutions recently experiencing rapid growth or changed missions but a lack of collegiality was noted almost everywhere, small colleges and large, stable institutions as well as those experiencing much change. Perhaps the condition is a consequence of the increasing specialization in all disciplines, and related to the expressed feeling of "having too much to do." Faced with keeping up with expanding knowledge and increased specialization as well as with teaching, advising, and committee responsibilities, faculty members may have sacrificed collegial relationships in order to meet professional commitments.

As measured by the successful carrying out of proposed activities, all of the individual campus programs succeeded. Few activities of the first three-year period were dropped or greatly modified for the period of renewal. Among less successful activities, attempts to establish interdisciplinary teaching or course work can be singled out. In one state university system a program of small grants to students to enable them to work with faculty on research projects was given up as not producing a wide enough impact. The same system also dropped its "chancellor's fellowships," concluding that these few but substantial faculty recognitions did not have sufficient impact on other faculty members or programs in their own or other colleges and universities.

In general, measures of faculty participation, expressed satisfaction, and sense of impact on students and the instructional program also attested to the success of individual programs. As to actual impact on student learning, few of the individual evaluations yielded such data, not surprising in face of the difficulty of measuring student learning. Nevertheless, it is hoped that some measures of this kind might still be obtained. For example, writing-across-the--curriculum, which was one of the most widely supported and apparently successful of activities, could provide writing samples that might reflect the impact of specific efforts to improve writing skills.

Evidences of activities positively affecting curriculum, teaching, professional growth, and commitment to improved instruction argue for the effectiveness of this extensive faculty development program, despite the lack of direct evidences of improved student learning. Programs appear particularly cost effective in small institutions where infusions of comparatively small amounts of money distributed through modest grants for travel, course revision, workshops, and the like appear to affect instruction in specific ways as well as to raise faculty morale generally.

The support of the Bush Foundation has enabled the evaluators to look closely at faculty development programs in a variety of institutions. Of greatest importance to other institutions engaged in or contemplating faculty development programs may be these conclusions about the characteristics of the most successful and least successful programs. Successful programs were characterized by

- careful and complete planning
- being neither too focused on limited objectives, such as supplementing sabbatical leaves, or too widely dispersed among a variety of activities
- effective leadership from both faculty and administrators without diminishing the feeling of faculty ownership or the numbers of faculty involved in planning and administering the program
- being visible on campus among faculty and to some degree among students and by increasing interaction and communication among faculty
- being aimed at tangible changes in courses, teaching strategies, subject matter competences, and curriculum likely to positively affect student learning
- not being aimed at remedying assumed or actual faculty deficiencies, but at reinforcing a wide range of faculty competences
- including group activities to strengthen the common

commitment to teaching and to exchange useful information and ideas

- taking risks, challenging the faculty to stretch individual efforts and to see beyond their own professional growth toward their impact on both students and the institution

Least successful programs lacked these chararacteristics or were weak in these specific ways:

- despite careful planning, programs served limited or routine interests of faculty and administration
- faculty development activities lacked a sense of purpose culminating in improved student learning
- program failed to arouse faculty enthusiasm or to be sustained by effective leadership
- program recognized specific problems that faculty development grants could help meet, but did not propose or pursue effective strategies related to improving teaching and learning

Bush Foundation programs will be sustained on most campuses for a six-year period with Foundation funding for most of them terminating between 1986 and 1988. Not until then will it be possible to know whether administrations will sustain these activities, one of the major objectives of the program. At this time, most institutions have taken over some of the funding of these programs, and a number have begun campaigns to build endowments specifically for support of faculty development.

By the 1990s, the retirement of a large faculty cohort should bring larger numbers of new faculty into the profession. Faculty development efforts are likely to be both necessary to and highly effective with these new professionals. The large impact of this regional program is to show that effectiveness of teaching can be enhanced by support of faculty development activities, and to provide detailed examples of effective practices and programs.

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FACULTY DEVELOPMENT IN ACTION: A MODEL FOR "THE NEW BASICS"

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"A Nation at Risk: The Imperative for Educational Reform," a report issued in 1983 by The National Commission on Excellence in Education, seriously indicted American public education. Among other recommendations, it calls for the creation of a new "Learning Society." A 1984 report, "Involvement in Learning: Realizing the Potential of American Higher Education," sponsored by the National Institute of Education, stresses that a nation wishing to become a learning society must emphasize higher education. This study, called "The Mortimer Report" in honor of the panel's chairman, Kenneth P. Mortimer, underscores the need to measure excellence in education not in terms of institutional resources, but in terms of student learning. Because learning and teaching cannot be separated, the report notes: "Faculty are the core of the academic work force, and their status, morale, collegiality, and commitment to their institutions are critical to student learning." (Mortimer, 1983, p.37) Faculty must be open to change, and institutional policies and practices must encourage innovation in teaching and curriculum design. L. Jackson Newell, in a critique of the Mortimer Report comments:

> As faculty we must be willing to scrutinize our teaching and our programs as carefully as we analyze Shakespeare, interpret elections, or exhume ancient artifacts. Furthermore, we must be imaginative in responding to the problems we discover or the opportunities we identify (1984, 7).

Traditional means of encouraging such openness do not necessarily work with the new social realities. A recent AAHE Task Force report notes that fresh approaches to faculty development are essential when teachers face declining public respect for their profession; less job satisfaction because of underprepared, undermotivated students; and a shrinking job market severely limiting career mobility. The Task Force calls for "a new set of premises for professional development which are appropriate to the conditions of the 1980's and 1990's." It calls on institutions to make career development a top priority by locating resources to support faculty, consulting them about personal and professional goals, treating them as unique individuals, and encouraging them to develop their talents in a variety of ways not traditionally regarded as staff development (Lovett, 1984, pp. 3-7).

Interestingly, the "New Basics" described in the report reflect to an astonishing degree the faculty development practices The University of Maryland Asian Division (UMAD) has followed for years. Because UMAD provides continuing education opportunities to adult learners associated with the U.S. military throughout Asia, traditional means of faculty self-renewal (sabbatical leaves, research facilities, funds for professional meetings, and so forth) have not been feasible. Therefore, the institution has evolved a flexible view of faculty development, drawing on the rich cultural opportunities of Asia and on the talents of carefully recruited lecturers.

UMAD faculty, hired for their teaching ability, are unusually flexible, gifted and versatile. They include young Ph.D's desiring experience in the classroom, middle-aged educators dedicated to teaching and cultural enrichment, and retirees who miss the excitement of the classroom. Such individuals constitute a "resourceful pool of talent capable of making many different kinds of contributions to the college and to society" (Lovett, 1983-84, p.5).

The faculty development activites of UMAD therefore provide a model of a flexible, innovative, teacher-oriented program. Activities include in-house faculty development workshops and those conducted by outside specialists; faculty involvement with curriculum development; public service offerings and outside consulting; in-house projects and administrative work; travel and cultural opportunities; and teaching development grants.

Faculty Development Workshops

The in-house faculty development workshops routinely offered by UMAD have been described elsewhere (Millis, 1983, pp. 553-554). UMAD, believing that consultants provide fresh insights and inspiration, has also welcomed at least one outside expert a year. For example, in March of 1984 Dr. Ron McBeath, Coordinator for the Faculty and Instructional Development Office at San Jose State University, conducted a series of four three-hour Self-Appraisal and Development Workshops in Japan, Korea and Okinawa. UMAD faculty selected the topics--Preparing Lectures, Conducting Discussions, Constructing and Scoring Essay Questions and Improving Instructor-Student Relationships. His workshops were exceptionally well-attended: the twelve workshops in the three locations averaged thirteen participants each, for a total of 149. This total represents sixty different individuals, since most people attended more than one workshop. In February 1985 Dr. McBeath offered another series of similiar workshops on Guam and in the Philippines.

A second consultant, Dr. Malcolm Knowles, professor emeritus at North Carolina State University and author of the classic The Modern Practice of Adult Education, in late November/early December 1984 gave three all-day workshops, focused on the adult learner, one in mainland Japan, one on Okinawa, and one in Korea. These workshops were also well-attended, with sixty-two different participants.

Faculty agree that UMAD's voluntary workshops do promote better teaching. Many have reported incorporating new techniques in the classroom. These conclusions support a number of observations offered in the recently published Power in Staff Development Through Research on Training:

> . . . Teachers can be wonderful learners. They can master just about any kind of teaching strategy or implement almost any kind of sensible curriculum--if the appropriate conditions are provided. It is also clear that those who criticize the motivations of teachers, worry about their willingness and ability to learn, or believe that the only way to improve the teaching profession is to change its personnel, are fundamentally wrong. High-quality training will give excellent results" (Joyce and Showers, 1983, p.2).

Curriculum Development

Faculty who are encouraged to develop their own courses grow professionally, as the AAHE Task Force on Professional Growth points out:

> Professional growth, and its correlate, career development often are a function of institutional projects. For instance, when a college decides to revamp its general

> education curriculum, commit itself to a new objective of computer literacy, or reach out to adult students, the faculty involved in such projects grow and change as a result of involvement. Indeed, most professional growth takes place in this way, not quite accidentally, but as a result of pursuing other objectives. That is why many foundations prefer to support "faculty development" activities not an as end in themselves, but as a component of curriculum development or other institutional undertakings (Lovett, 1984, p.6).

Thus, UMAD encourages its lecturers to develop Special Topics courses, particularly one-credit-hour "mini-courses." These courses, which undergo a thorough review process, are generally on specialized topics not listed in the university catalog. Special Topics courses in literature, for example, have included The American War novel, The Vietnam War novel, Southern Literature and Culture, Children's Literature, Fantasy and Science Fiction.

In addition, faculty are encouraged to discover the stimulus of team-teaching. Courses recently team-taught have included: "Interdisciplinary Perspectives on Asian Modernism"; "The American West: Fact and Fiction"; "Arts of Okinawa and the Ryukyu Islands"; "The 1920's: History and Literature."

Outside Consulting and Public Service Projects

Faculty can find renewal by moving beyond the confines of the traditional campus, exploring projects and activities which may bring refreshing insights and experience back to the classroom. In a recent article Carol M. Boyer and Darrell R. Lewis comment favorably on the value of consulting:

> Faculty consulting . . . is viewed more broadly as a natural extension and application of one's professional or scholarly expertise outside the academic institution and as an important form of

> public service that long has been recognized as a legitimate expression of faculty role and responsibility. Viewed in this way, faculty consulting relates directly not only to the intellectual, social, psychological, and economic well-being of the individual faculty member but also to the tripartite mission of most academic institutions (i.e., teaching, research, and service) (Boyer and Lewis, 1984, p.638).

In UMAD, outside projects usually do not involve payment, but instead grow out of acquaintances with colleagues at universities in the host country where a lecturer is temporarily assigned or from opportunities to offer free public service courses to the military community. Lecturers have broadened their professional outlook by participating in voluntary activities such as judging speech contests on Okinawa and on Guam; giving a talk on rising Japanese crime rates to employees at the Juvenile Detention Center at Iwakuni, Japan; presenting a lecture, "The Restless Americans," to Yokosuka, Japan, Municipal City School Teachers; offering a series of public service lectures to the Naval Security Group at Clark Air Base, Republic of the Philippines, on the topic of "The Sociology of Terrorism"; speaking on Korean-American Relations to U.S. Information-Agency sponsored groups; offering a four-hour course on "The Language and Writing of Performance Evaluations" on the remote Indian Ocean island of Diego Garcia.

Recent paid consulting projects involving Asian Division faculty have included a management project for the Marine Corps on Okinawa; a managerial communications seminar for non-commissioned officers at Camp Zama, Japan; and a series of workshops at Subic Bay for the Naval Supply Depot entitled "Goal Setting for

Managers," "Goal Setting for Mid-Managers" and "Effective Writing and Clear Thinking for Managers."

Faculty Consultation and Administrative/Consultant Work

UMAD faculty are encouraged to participate in institutional activities and policy decisions. Lecturers, for instance, have input into the textbook selection process, library acquisitions, and curriculum development. The Writing Standards policy noted in the Catalog and Student Handbook was, for example, faculty generated. Because UMAD administrators traditionally come from the faculty ranks, they are likely to agree with Richard Kamber's comments in The Chronicle of Higher Education:

> The key to good administration is consultation--frequent, patient, and candid consultation, listening to and hearing what the faculty has to say, not merely because it is polite or politic to do so, but because the faculty members are talented professionals whose experience and training enable them to offer valuable advice (1984, p. 96).

Under a second definition of "consulting," UMAD frequently employs faculty for special projects or studies. Lecturers have developed curriculum guides and resource booklets and have written reports on media-assisted courses, Open University, and UMAD's marketing approach. Faculty have gained administrative experience serving as liaisons for new programs opening at Capas, Tarlac, Republic of the Philippines, and Woomera, Australia. Lecturers sent to Diego Garcia routinely perform administrative duties.

Travel and Cultural Opportunities

Besides the stimulation of teaching and living in a variety of Asian countries, faculty have many travel opportunities between academic terms. Faculty can also participate in institutionally provided educational opportunities including cultural events, field trips, and study tours. UMAD has sponsored several art exhibits and lectures in Japan and Korea (Mark Perlman, Mary Tolman, Choi Young Rim) and an on-base performance by a popular Tokyo theatre group, Albion-za. Field trips have taken students and faculty to Kabuki theatre, the outer islands of the Ryukyan chain, a Negrito village in the Philippines, and a shaman ritual in Korea. Lecturers have participated in Maryland sponsored study tours to Kyoto and the People's Republic of China.
Since 25 October 1982, when an exchange agreement was signed between Northwestern Polytechnical University in Xian, China and UMAD, five faculty members from the Asian Division have lived and taught in the People's Republic of China.

Teaching Development Grants

In February of 1985 UMAD awarded several grants to lecturers, both core and adjunct, to support course development and improvement and to encourage teaching excellence. A faculty selection committee ranked applications by the following three criteria: (1) Relation to Maryland's teaching mission; (2) Obvious and immediate benefit to students; (3) Clarity of proposal, budget and outcomes.

Conclusion

As the AAHE Task Force on Professional Growth empahsizes, "the vitality and quality of a college or university depends on the vitality and quality of its faculty" (Lovett, 1984, p.6). UMAD recruits the best possible teachers, supports them in the classroom, evaluates their performance, and helps them develop both professionally and personally through a broadly defined faculty development program. The personal and professional growth of faculty cannot be separated from institutional health and vitality.

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A BRIEF OUTLINE OF PROPOSALS FOR IMPROVEMENT OF PROFESSIONAL TRAINING OF UNIVERSITY TEACHERS: A CASE FOR A DIPLOMA IN TEACHING IN HIGHER EDUCATION

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1. *Introduction*

There appear to be only three modes of bringing about the state of affairs in Higher Education whereby all, or at least a large majority of University faculty, are professionally trained as teachers in addition to their training, by virtue of their degrees, as researchers:

1. An "*Idealistic-Millenarian*" mode, which should encourage and inspire the faculty to become *so* enthusiastic about the improvement in their tuition skills that they will recognise it as an imperative for their personal progress towards some kind of "professionalised ideal self", as well as for bringing about some educationally ideal state of mankind.

2. A "*Coercive-Millenarian*" mode, which should encourage the prospective members of the faculty to become professionally trained teachers by making special rules to this effect in the conditions of appointment; the prescription of "let us enforce it for the good of Higher Education".

3. A "*Pragmatic-Utilitarian*" mode, which would encourage the faculty to be trained as teachers by guaranteeing substantial salary increments for diplomas and other certifications in pedagogics, awarded on completion of substantially long professional courses.

I am quite convinced that the third mode, notwithstanding its stark materialism, should prove to be the one which would most readily involve and develop the underlying idealistic motivations of the first two, with least discomfort all round. It is with this third mode of persuasion that I propose to occupy myself in this paper.

The first mode is known to me from nearly two decades of observing its implementation in Birmingham, and from some knowledge of the situation in other Universities in the U.K. The second mode is largely alien to my ways of operation in matters of such great delicacy and complexity as those concerning Higher Education.

2. A note on the past and the present situation

In spite of the considerable efforts expended, since the late sixties, by the Universities' Advisory Service for Teachers and Staff Development Committees and other organisations, to encourage the new members of staff to give serious consideration to professional training, the faculty interest, as judged by their participation in the brief induction courses, workshops and seminars, remains very insignificant.

An example of typical trends can be taken from the figures of attendances at such workshops and courses in the University of Birmingham, which was, as early as 1969 (in fact earlier: 1967), in the forefront of active endeavours in providing some pedagogical support to the teaching staff. It is interesting to note that even then it was already very clearly recognised that all such efforts were almost futile. An opening passage from the first report (1972) of the Working Party on Teaching Methods and Services for New Staff states:

> "Courses on Teaching Methods for new staff have now been provided under the supervision of the Working Party for the past three years. In spite of all our efforts we have failed to attract the degree of support from new staff that we should have done (see Table 1 in Appendix). We feel

> unable to carry on in the present fashion where the main responsibility for the provision of the service rests with members of staff who are already very heavily committed to their normal university duties.
>
> The present position is unsatisfactory in spite of the great voluntary input to the Working Party from its members with their wide range of expertise drawn from many Departments of the University (21 members). For such an effort by willing and enthusiastic staff to result in attendance as set out in Table 1 is nothing short of derisory."

The situation has not changed much over the years. The figures of attendance of the New Staff at the Teaching Methods Workshops in the years 1982 and 1983 show this quite clearly (see Tables 2a and 2b in Appendix).

At last, after some 14 years of these extraordinarily persistent and painstaking proceedings, along the lines of the "Idealistic solution", a small gesture has been made towards the more earthy motivations of the resistant academic community in the hope that they will become more readily involved in the schemes of training organised by the Advisory Service on Teaching Methods. Three half-day workshops related directly to research work were offered during 1983 and 1984. The attraction was immediate and drew attendances from both New and Experienced Academic Staff. The first Workshop (1982-83) entitled "Publish or Perish: A Guide to Publishing Academic Papers" attracted 83 staff, including 20 from other institutions. In the two more Workshops in the 1983-84 Session, the first one, a repeat of "Publish or Perish", drew 49 participants and the second one on an equally relevant topic - "Writing Applications for Research Grants", drew 28 participants. There is, of course, no need to comment on where the professional interests of the faculty lie, but a tabulation (Table 3 below) may be useful to the unconvinced.

Table 3 Attendance of teaching and research staff at workshops concerned with "teaching methods" and with "research"

Year	Teaching Methods*	Research Work**
1980	9	-
1981	5	-
1982	11	-
1983	8	83***
1984	9	49*** and 28***

Workshop Topics:	"Personal Tutoring" "Individual Teaching" "Lecturing" "Small group Teaching" "Tutoring Students with academic difficulties"	1. "Publish or Perish: A guide to publishing academic papers" 2. "Writing applications for research grants." (No workshops on these topics in 1980-1982)

NB: * = Average attendance in 4 or 5 workshops

** = Actual attendance

*** = Including 20, 4 and 3 participants from other U.K. institutions in figures 83, 49, and 28 respectively.

In 1984 two workshops (1 and 2) were organised.

Naturally, all these illustrations of the trends of faculty participations in the schemes of professional training must, in the absence of data from other Universities, be regarded with caution. Perhaps, in some other University, unknown to me, schemes of faculty training in "teaching methods" are more successful. But I personally doubt it. It must also not be assumed that the hard work and commitment of my colleagues in working parties and committees concerned with New Staff Advisory Services is disparaged. They have definitely contributed, most effectively, to marked changes, in a positive direction, of the attitudes of faculty and administration to the problems of staff training, and certainly continue to do so in a great variety of ways by propagating this objective.[1] The main objective for using this illustration from one University is to draw attention to the disproportion between the expended efforts and enthusiasm of the organisers over so many years and the evidence of interest in improving teaching skills amongst new members of the faculty. What interests me in this context is the question of what kind of inference and reaction can be expected from these intellectually sophisticated new members, when they perceive that all that is necessary for them to do, to acquire high professional skill in tuition, is to attend four or five discussion meetings with the old and new staff? What other craftsmanship or profession in the world would regard such "training" as sufficient to acquire the highest level of skill in their spheres of service management or manufacture?

It seems that the problem of the malfunctioning of the "idealistic-millenarian" mode of professional training for University teachers is not so much what else should be done to inspire the faculty to become more skilled teachers, but mainly what kind of training system would tend not to trivialise itself to the point of disregard, in the minds of existing and prospective dons?

It seems that this type of question has not, as yet, occurred to those involved in the design and organisation of these brief induction courses and workshops. I hope that the real reason is not that they themselves, in their heart of hearts, regard it as altogether an incidental, or a trivial element in professional academic work. Yet, should this be so, I would not suspect them of a lack of foresight, but congratulate them on their very perceptive assessment of the real situation in the academe, and on their most obvious pursuits of the "pragmatic-utilitarian" modes of advantageous adaptation to the "art of the possible".

Thus, it seems that the situation, contrary to the widely recognised need for professional training for University teachers, remains virtually unchanged. The vast majority of University teachers have no professional training for carrying out half of their statutory duties - the teaching of their undergraduate and postgraduate students. They remain the only prestigious profession in the country dependent entirely on personal, amateur efforts to fulfil their pedagogic role, and this in spite of the enormous advances in educational studies and practice.

3. Notes on reluctance towards professional training

It must, however, be recognised that preoccupation with teaching has been, and continues to be, largely counterproductive to the professional progress of University lecturers. It is quite obvious that any young person of a cool, practical turn of mind would be unwise to spend time in deeper, speculative thinking about matters concerning education, or on prolonged formal study of the nature of human learning and methods of teaching, or on schemes of self-evaluation of the effectiveness of teaching, whilst holding the second part of his academic duties, the research, as merely a base for the dissemination of knowledge. University teaching staff are formally appointed as lecturers (teachers) who also do research rather than as researchers who also do teaching. The label is clear and the pleasure of public esteem derives, as the years go by, from the title of lecturer rather than from the title of researcher. Yet, at the same time, it soon becomes apparent to the new lecturer that promotion and financial awards must be gathered not from the externally prestigious activity of teaching, but from the internally acknowledged efforts of publishing research results.

Moreover, the very fact that members of academic staff are appointed as lecturers almost entirely by virtue of their skill in research, and that this automatically granted teaching title implies a function which evidently does not need any direct preparation, militates against exerting any effort to learn how to teach; or more precisely, to learn how to help students to teach themselves how to learn what the lecturer professes to teach.[2] The fact, if faced honestly and squarely, is simply one of economy of effort.

Other facts are also undeniable, namely that some lecturers can intuitively combine research and teaching into a harmonious, mutually supporting activity and skill, and that some can also be effective as teachers, even if they neglect the teaching side for the pleasures extracted from the pursuit of research, and that most get away without an inkling of guilt for doing their job poorly, simply because most students teach themselves regardless of tutors.[3]

Thus, a thesis can be proposed that it is their very natural, common prudence which militates against any interest, or involvement in the sporadic schemes of training in learning, workshops, conferences, newsletters and other forms of the necessary agitations for stimulating interest in matters of skilled pedagogy.

The resistance and consequently the overt, or covert campaign against professional training, must be recognised as a very natural outcome of the long tradition of regarding university teachers as qualified by virtue of their degrees. And to change this tradition it would be necessary to make a new start in appointments policy, rather than hope for the sudden, or even gradual reversal of attitudes amongst existing teaching staff. Frankly, the younger, or the first appointees to lecturing posts regard it as almost an insult to be told that they should do something about training in pedagogy, since this was not a requirement of the appointment, or even hinted at, whilst the experienced lecturers resent, and justly so, being suddently told that they may not know how to teach!

Besides, regarding the issue pragmatically, it is really very unreasonable to expect people to exert themselves professionally in any direction, if they are paid for their work without any such effort. By analogy: if Physiologists, Anatomists, or Biochemists could practice medicine, or surgery without medical training, on a full G.P.'s or Consultant's salary, how many would volunteer for any lengthy training, except those who would feel uneasy about their adequacy to do their work properly? Some would, no doubt, learn on the job and become eventually very good practitioners, but many would not.

4. Notes on the permanent provision for effective and prolonged professional training of University teachers

Pursuing the pragmatic approach to the problem of encouraging University teachers to educate themselves professionally to become more effective in helping students to learn the art of academic craftmanship, it is necessary to think in terms of the palpable rewards for such efforts.

The effectiveness of teaching could be more seriously considered as a factor in promotion, but for this some schemes of evaluation should be agreed upon. This may be very difficult to do and it is likely to result in even more cases of injustice in promotion than nowadays. The only other way seems to be to guarantee a permanent financial advantage to those teachers who wish to undergo professional training. To do this it would be necessary to follow up the pattern of training school teachers and to train University teachers on full-time, or part-time courses, leading to a Diploma in Teaching in Higher Education, before they are appointed, or whilst in service. Possession of such a Diploma would entitle University teachers, on appointment, to receive the equivalent of at least two yearly increments of salary and to keep this reward throughout their academic career. The advantage in financial reward would be considerable, the vogue for interest in teaching would blossom overnight, and there can be little doubt that a residue of discussions, arguments, readings and reflections, as well as lessons from supervised teaching practices, would leave a permanent mark in the professional consciousness of all who have gone through such courses. Time given to such studies, and the opportunity of thinking, discussing and writing about educational problems systematically, over many months, is what will make the difference - the contents of the course being only of secondary importance.

5. Notes on setting up a permanent course leading to the Diploma in Teaching in Higher Education at a University similar to Birmingham

The course leading to the Diploma would be organised and run in the usual way, as any other postgraduate scheme of study-cum-practical training. The University of Birmingham has all the potential facilities to run it, including the availability of a Course Tutor and his clerical assistant - the Organising Tutor for the Advisory Services on Teaching Methods and his staff. The most obvious location for the course would be the Faculty of Education which would not only simplify the administrative arrangements, but also provide the necessary professional, pedagogical atmosphere. The administrative arrangements should be supported by a joint Faculty of Education and Senate Committee with representatives from all Faculties.

The Students

The course should provide two years part-time, or one year full-time, tuition and should be open to all Ph.D. students (as potential lecturers), as well as to the existing members of the teaching staff. It is quite possible that a course for a professional, remunerated Diploma would attract many candidates from other Universities and become a profitable enterprise as far as the tuition fees are concerned.

The Curriculum and the Student-tutors contact hours

Initially, until some experience in running the course is acquired, the course should consist of the Common Core subjects, including areas of study pursued in other teacher-training programmes. They should certainly be those aimed at (a) widening the students' educational horizons (Philosophy, History, Sociology and Economics of Education) and (b) encouraging the students to focus on the more specifically pedagogical issues such as Educational Psychology, Educational Technology and Administration. The Method Module of the course should include methodology of teaching and learning in specific, major areas of University subjects of study such as Arts, Sciences (Pure and

Applied), Biological Sciences, Medicine and Dentistry, Law, Commerce and Social Sciences, problems of assessment and examination, use of teaching aids etc. The method part of the course should involve substantial numbers of periods for supervised teaching practice in appropriate departments. The Assessment assignments would be mainly written essays covering the selected groups of subjects, plus a major dissertation. The time spent on formal student-tutor contacts, (lectures, seminars and workshops), could probably be limited to one day a week for the two year part-time students, and not more than two days a week for the one year full-time students.

Teaching Staff

The Course Tutor should be able to call on members of staff in the Faculty of Education and in other Faculties to give courses in the Common Core part and in the Method part. Arrangements should be made with the Faculties and Heads of Departments to release volunteer Method teachers for these teaching duties on lines similar to the inter-departmental service teaching which is already a well established tradition at the University. The University Staff is large enough and versatile enough to service the Diploma Course without any difficulties.

6. Concluding Notes

Now that the more adventurous minority of educational innovators has succeeded in stirring up deeper interest in university teaching there are only two major stumbling blocks impeding the development of effective, permanent and formal provisions for professional training: the problem of funding and the problem of current attitudes to training in academe. The second stumbling block is more serious than the first one as the writers of the final report on the Nuffield Foundation Group for Research and Innovation in Higher Education aptly, though somewhat desperately, stated: "nothing will happen, however, without a change of attitude on the part of staff and administration".[4]

The setting up of a permanent Diploma Course for teachers in higher education should be beneficial in changing attitudes and fostering interest in methods of teaching in Higher Education in general. The main agents of such a change would be the "methods tutors", drawn from the large number of major areas of study, who would act as the leaven of interest in methodology of teaching in their own departments. Their contacts with each other, whilst teaching in the Faculty of Education, as well as their own thinking and development of methods used in teaching their own subjects, will have some impact on their departmental colleagues. It is through these contacts in their respective Common Rooms that the interest in the pedagogic side of the University would be aroused and maintained.

Thus, the financial advantage to the professionally trained individual lecturer would become a priming mechanism for improvement and innovations in the teaching and learning side of the University objectives - teaching students how to become autonomous learners for the rest of their lives.

Obviously, the courses cannot be inaugurated and run without the financial support from the Universities Grants Committee and without negotiations with the Association of University Teachers. But once the principle of a financial reward for professional training is accepted as a part of the logistics necessary for the long-range strategy of improving University teaching, the cost of such rewards for Diplomas should not be considered as badly spent money. It is worth remembering that as things stand at present the Universities in Britain spend less than one twentieth of one percent of their budgets on the most ineffective training of their teaching staff to enable them to carry out half of their statutory duties for some 40 years of their academic career.

Notes and References

1. The University of Birmingham Advisory Service on Teaching Methods has produced and collected a considerable amount of published material and papers which would be of great value to permanent schemes of professional training. It publishes a lively and informative newsletter, The Teaching News, which serves as a medium of contact and correspondence both within and outside the campus.

2. Raaheim, K. and Wankowski, J.A. (1981). *Helping Students to Learn at University*. Sigma Forlag, 5060 Soreidgrend, Norway.

3. Wankowski, J.A. (1983). *How students view the help given to them by the Study Assistance Unit*. University of Birmingham Educational Counselling Unit, Monograph, University of Birmingham, Birmingham, England.

4. Becher, T., Hewton, E., Parlett, M., Simons, A. and Squires, G. (1976). *Making the best of it: Reconciling ends, means and resources in Higher Education*, London, Nuffield Foundation.

Appendix

Table 1 Attendance of New Staff (1969-1972) at the two days Introductory Courses

Year	All New Staff	Assumed as eligible for training	Attended
1969-70	88	56	14
1970-71	164	100	24
1971-72	120	60	25
Totals	372	216	63

Table 2(a) Attendance of New Teaching and Research Staff at the Teaching Methods Workshops.

Year	New Staff Agreeing to Participate	New Staff Participating
1982-83	60	25

Workshop Attendance	
"Personal Tutoring"	7
"Tutoring Students with Academic Problems"	11
"Individual Teaching"	3
"Lecturing"	11
"Small Group Teaching"	6
Total Attendances	38

Table 2(b) Attendance of New Teaching and Research Staff at the Teaching Methods Workshops

Year	New Staff Invited to Participate	New Staff Participating
1983-84	95	23

Workshop Attendance	
"Personal Tutoring"	10
"Lecturing"	12
"Small Group Teaching"	8
"Evaluating Teaching"	3
Total Attendances	38